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University Chronicle

VOL. VII

SEPTEMBER, 1904

No. 1

PHILOSOPHICAL ORIENTATION AND SCIENTIFIC STANDPOINTS.*

JAMES WARD.

Within the last few months the civilized world has been united in commemorating the distinguished philosopher whose life ended at Königsberg a hundred years ago, but whose thoughts have been active and fruitful throughout the century that has closed and bid fair to continue their influence in the century that has now begun. In a short article, written in 1786, entitled: *Was heisst: sich im Denken orientiren?* Kant has provided us with a good starting-point for our present discussion.

Sich orientieren, to orientate oneself or find one's bearings, means, says Kant, "in the literal sense of the words, from a given quarter of the globe, one of the four into which we divide the horizon, to fix the rest, in other words, to determine which is the east. If I see the sun in the sky and know that it is now noon, then I know how to find the south, west, north and east. For this purpose however one thing is indispensable, a 'feeling' of difference within myself as subject, the difference namely between the right hand and the left. Without this, being in the west say, I should not know whether to locate the south on the right or on the left. And if by miracle all the stars were to reverse their courses, retaining their relative positions, the

* Address before the Philosophical Union of the University of California, August 26, 1904, by Professor James Ward, University of Cambridge.

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astronomer attending only to what he sees and neglecting what he 'feels' would unavoidably lose his bearings." In order, then, to orientation in the literal sense, geographical orientation, two factors are necessary, the objective data, the sun or the pole-star as seen, and the subjective sense of difference between right and left. Now for Kant's question: "What does orientation in thought mean?"—philosophical orientation, as we may call it. Though our answer to this question, the answer most commonly given nowadays, is in the main that which Kant gave, it will be best to deal with it independently. If the analogy between spatial and speculative (or philosophical) orientation is to hold we must determine what there is in the latter corresponding to the objective factor, and what to the subjective factor, in the former.

The objective factor, the horizon for philosophy, is the circle of the positive sciences. It is said that science is the exact measurement of phenomena, and again that it is their methodical description, their systematic classification. But phenomenon is a doubly relative term. Things *per se* we may talk of, but phenomena *per se* are impossible. An appearance must be not only an appearance *of* some one, it must be also an appearance *for* some one. *Wie viel Schein, so viel Hindeutung aufs Sein*, said Herbart: the phenomenal everywhere intimates an adequate reality, and not only a reality adequate to its production but a reality adequate to its perception. An astronomer cannot produce an eclipse nor can a worm perceive one. The existence of phenomena, then, implies a double activity, a certain *rapport* between giver and receiver. This fact we recognise when we describe experience as the interaction of Ego and Non-Ego; and we may follow Leibniz in saying that between the two there is a correspondence such that the more advanced the Ego, the wider its horizon, the more varied the data of its experience: every Ego or subject "mirrors" the same universe, but each from its own point of view. The data of science, then,

answer to the human horizon. But in calling itself positive, science intends expressly to confine itself to these data, and to leave the real implications of Ego and Non-Ego—which such data presuppose—entirely aside; in other words, science ignores altogether what we call philosophical orientation. This is no defect in science as such, but it is a limitation, the inevitable consequence of that division of labour which the successful prosecution of research in so wide a field entails upon the narrow mind of man. It is only when the limitation is forgotten—as unhappily it often is—that we find men of science losing their bearings and drifting towards philosophic nihilism. In the beginning it was only phenomena, in the end it is only illusion. To use terms that Kant has made current—only however to express a distinction that goes back even to Plato—science is wholly the affair of the understanding, or reasoning; it is reason—a very different matter—that enables us to orientate ourselves. Reason, then, is the subjective factor which, by its theoretical and practical demands, helps us to determine our *προῦ στῶ* and to find our bearings. The concrete world in which we live and move and have our being is not a museum arranged in classes and compartments: sorted and dissected in this fashion, we can never discern its meaning or interpret our place and purpose in it. Life is the supreme fact in this world and the good is its supreme idea, the end and aim of that activity which all living things display. The greatest names in philosophy—Plato, Aristotle, Spinoza, Kant, Hegel—are on this point at one; and the common thought of mankind, which has no conscious philosophy at all, here agrees with them. For we have all to face life and the world as a whole, and are supremely concerned about practical issues. But science, which is bent only on ascertaining what it calls the ultimate elements and the fundamental processes of things, treats them—as Hegel quaintly put it—as if it were peeling off the coats of an onion. It disintegrates and takes to pieces, and then is apt to labour under the delusion that the world after this analy-

sis still remains as it was, is still the living concrete reality and not so many lifeless abstractions. The error lies in forgetting that analysis is only one-half the process and that the main point is the re-union and interpretation of what has been divided. And it is when analysis never gets beyond the stage of division that Goethe's words are true:

*Encheiresin Natura, nennt's die Chemie;
Spottet ihnen selbst, und weiss nicht, wie:
Hat die Theile in ihrer Hand,
Fehlt leider nur das geistige Band.*

But though analysis be only half the process, not the main point but only a preliminary, it is nevertheless an essential one. We may have the parts in our hand without the spiritual tie that makes them a living whole, but we cannot have this articulate whole without the several members of which it is to consist. Or in the language of Kant's metaphor, with which we began, we cannot find our bearings in a vacuum devoid of objective contents any more than we can find them without reference to ourselves. Philosophy cannot dispense with science nor can science, however complete, render philosophy superfluous. The whole indeed is nothing without the parts, but it is always more than the bare sum of them, most of all more when these *disjecta membra* attain to life and meaning. Obvious as this is now to all of us, its truth was ignored at first when philosophy essayed to read off the meaning of the world before it had learnt either to spell or to construe. Nowadays we are familiar with the opposite extreme, when to the many that say, "Who will shew us the good?" some A B C of physics or physiology, some *Grammar of Science* is presented, as if letters were the same as literature and a knowledge of the parts of speech sufficient for the interpretation of the so-called riddle of the universe. Philosophy, then, cannot begin at the beginning as "a metaphysic without assumptions" and by a royal road demonstrate *a priori* what is the reality and what the meaning that underlie appearances. But the sciences which decipher and classify

these phenomenal data from a hundred diverse standpoints are still further from beginning at the beginning, nor can they carry us on to the end, and without any philosophic orientation reveal to us the living and active meaning, the spiritual tie, that unifies them all.

Still it is not my purpose to offer any remarks on the central ideas of Philosophy—the true, the beautiful, and the good in their relation to the soul, the world, and God. It is in respect of these that it is said that philosophy begins where science ends. But there is a humbler function of Philosophy in which it has simply to criticise the fundamental concepts of the sciences themselves. In other words, before we attempt to orientate ourselves to the whole of experience, we recognise nowadays the desirability of orientating the diverse standpoints of the several sciences to each other. In a big national survey it is found that—after the several trigonometrical figures have been made consistent, each for itself—a further so-called 'final reduction' is requisite before all these figures can be adjusted to each other so as to make one consistent whole. This final reduction is not obtained by further surveying, but by reasoning applied to the surveys already attained. The department of philosophy known nowadays as Epistemology, or the Higher Logic, has an office analogous to this final reduction to perform for the partial surveys of the sciences. The latest historian of science, Dr. Theodore Merz, in his History of Scientific Thought in the XIXth Century treats in succession of the astronomical, the atomic, the mechanical, the physical, the morphological, the genetic, the vitalistic, the psychophysical, and the statistical views of Nature. Even when these several views have been mutually adjusted and combined, there remains, as we have already seen, the final and supreme problem of interpreting the whole, which they merely present. But as they stand, some turn out to be incompatible with others: contradictions emerge, and therefore there must be error somewhere; and as we are willing to concede that it does not

lie in the special concepts of any given science, we infer that it must lie in some mistake as to the relation of their several standpoints to each other. The first business of philosophy, then, is to reduce these to a consistent orientation.

This conflict of the sciences, this 'strife among the faculties' as Kant called it, has, I understand, occupied your society during the past year, and I gather that I am invited to the honourable but not very enviable task of reviewing the situation in ignorance of the results of your deliberations. The special topics with which we are to deal are the relation of the 'inorganic world' to the 'organic world' and the relation of the 'world within' to the 'world without.' I propose to start with the last so far as it involves the problem of adjusting the sciences that deal with matter and those that deal with mind, and then to pass to the problem of adjusting the sciences of matter and the sciences of life. We have no direct concern with the details of any of these sciences: what chiefly interests us are their distinctive categories and the relations of these on the one hand to our own minds and on the other to our experience as a whole.

The several sciences of matter, the physical sciences, have each their special concepts and methods, but the so-called pure science of dynamics is assumed to be ideally applicable to them all. Their aim is to substitute its fundamental categories in the place of their own special concepts as derived from sensible experience, and also to advance their own more or less inductive methods to the deductive stage to which dynamics has already attained. In pursuit of this ideal they all alike seek to describe qualities in terms of quantity, to replace the varieties of material objects by geometrical configuration of mass-points, and to represent the diverse states and changes of those objects by the positions and motions of such mass-points. Now there are several possible forms of dynamics, equally self-consistent and internally coherent, just as there are

several possible geometries and algebras. But in all forms of dynamics it is assumed that mass-points, whether they constitute discrete atoms or a continuous ether, are in-generable, indestructible, and inert. Hence it follows that the positions and motions of each and all are rigorously concatenated; so that from a knowledge of all of them at one time the positions and motions at any other time—whether past or future—can be exactly calculated.

In the organisation of the sciences pertaining to the physical standpoint thus briefly sketched, three sorts of knowledge are concerned:—particular percepts, empirical generalisations, and mathematical constructions; or in the language of English philosophy:—the present testimony of our senses or the records of our memory, inductive probabilities, and logical demonstrations of the relations of ideas. The first and last are certain, but the first, as Locke taught, can only assure us of particular realities here and now, and the last, as Hume said, though "they ever retain their certainty and evidence, are without dependence on what is anywhere existent in the universe."* The several laws of nature belong entirely to the second class: they are not presented matters-of-fact and they are not necessary relations of ideas; they occupy a peculiar position between the two. They start from and rest on sensible experiences, but in systematising and unifying these data or 'facts' we are said to apply the 'ideas' or principles of the abstract sciences, which are independent of concrete experiences. It is important now to note that every form of pure dynamics is wholly abstract and exact: it is altogether ideal in Hume's sense, 'without dependence on what is anywhere existent in the universe;' as is evident on a glance at any accredited text-book. Pure dynamics is concerned only with absolute time, absolute space, absolute motion: it recognises no qualities, no substances, no causes, no laws: its fundamental concepts or principles are not given but defined; in the language of Locke they are

* *Essays*, Green and Grose, ii. 22.

not eetypal but archetypal, and the whole procedure is rigidly deductive. It is obvious that the special sciences which are supposed to keep in touch with sensible reality and to proceed by methods of observation and experiment can never without a complete breach of continuity advance into this ideal domain. Facts never sublimate into pure ideas, nor inductive probability into deductive proof. Now what—in view of this undeniable gap between the ideal and the real—is meant by applying abstract science to concrete experiences? Supposing a particular geometry or dynamics does not 'apply,' it may become useless to the physicist dealing with this world: in fact non-Euclidean geometry and non-Newtonian dynamics do not at present interest him; but that does not affect their intrinsic truth. What then is the significance of a dynamical system that does apply? To this question two different answers are given by the two different schools into which on this issue physicists are now divided. The one we may fairly call the physical realists—since they dub their opponents nominalists—and the other we may allow to be physical conceptualists or symbolists. The first are metaphysicians in spite of themselves. For them the structure built on the Newtonian laws of motion is verily Natural Philosophy, as it was long called; it discloses the reality that lies beyond or 'behind what we can see and feel.' For the second that structure is but a mathematical scheme, whose sole use, in the now famous words of Kirchhoff, is "to describe in the exactest and simplest manner such motions as occur in nature." Here, applicability means only utility, economy: one aspect of facts, the processes of nature as quantitative, are to be described in manageable and comprehensive formulae; but there, applicability means revelation: Nature *is* a mechanism. Of course if the realists are right, the symbolists are right too, in so far as the greater includes the less; if Nature verily is a mechanism it may surely be described as one. *But the converse is not true.* The most we know is the descriptive applicability, and

from this the real identification of Nature with our ideal scheme does not follow. Even mechanical *description* is not adequate to Nature as a whole, but only to one aspect of it. The like holds, of course, of arithmetical and geometrical description; these have a still wider range though they are still more inadequate. To the attempts of the Pythagoreans to make number the ultimately real, and of Plato to connect the five elements—earth, water, air, fire, ether—with the five regular solids, the mechanical theory of the physical realist is a fitting sequel; and what an ancient scholiast said of Plato could be said of him—*κατεμαθηματικέύσατο τὴν φύσιν*—he reduces nature to a mathematical abstraction.

But leaving abstract ideas and returning to the actual phenomena with which the physicist is confronted, we find that he can never discern, much less ear-mark, anything resembling mass-points. He can only apply his tentative mechanical specification to statistical results, and his confidence as to the ultimate basis of these cannot be compared with, say, the anthropologist's knowledge that his 'mean or average man' is a concept based on tables relating to real men. Moreover the moral statistician knows that real men are distinguished by idiosyncracies of character, and are actuated by motives, which find no place in his abstract concept of the average man: in other words he describes certain aspects of society in mathematical fashion, well knowing that his description tells him nothing of the real factors at work in the making of history. The physicist is in a worse position. At best, Nature, if a mechanism at all, is a concealed mechanism; so that his problem is an inverse one, and the chances of his particular specification being correct are infinitesimally small. And since this must hold of every particular specification, he must for ever face the possibility that he is wrong in assuming that nature is really and fundamentally a mechanism at all. Happily science nowadays—science, I mean, that minds its own business and keeps to its standpoint—finding indeed

that 'all things are ordered by measure and number' and therefore so far amenable to mathematical description and statistical treatment, yet does not confuse its quantitative symbols and 'mental pictures' with the phenomena so far described—to say nothing of any reality behind them. On the contrary to render its descriptive scheme as simple and comprehensive as possible, science is ever revising its hypothetical mechanism and giving to its working-models a more and more abstract and ideal form, thereby rendering their symbolic and conceptual character ever increasingly evident. There is no question of its utility as a working hypothesis, for it works; but it has worked better the more abstract and ideal it has become, the farther it has advanced from all semblance of concrete reality.

But scientific beliefs, like fashions, have a way of spreading downwards, and so physical realism, though it has passed its heyday among the scientific classes, still flourishes among the unscientific masses. Perhaps it would be truer to say that while its scientific substance has practically vanished, its metaphysical shadow still hangs over us like a pall. It is what is now commonly called Naturalism. Let us recall the question that interests us. We are confronted by the theory of Nature as a mechanism, and we ask: What is the relation of this theory, on the one hand, to ourselves as consciously active, and, on the other, to the perceptual world with which we are practically concerned? There are two distinct answers. If we perpetuate the oldest and naivest of metaphysical blunders—we might call it the metaphysical fallacy *par excellence*—in other words, if we regard abstract ideas as concrete things and then take the standpoint of the theory itself as the primary and absolute one, we have the answer of Naturalism.

Orientating in such wise from this standpoint, life and mind, humanity and the whole course of human history and experience, are declared to be but secondary and 'collateral products,' mere epiphenomena or incidental scintillations in the working of the soulless, ruthless, meaningless wheels

which we call the laws of Nature, but might equally well call the mills of Fate. These wheels grind slowly and grind exceeding small; working together neither for righteousness nor against it, they compel us forever to banish from all regions of human thought what we have been wont to call spirit and spontaneity. These wheels were rolling on before we with all our hearts' desires came flickering on the scene, they roll on now unconcerned by our impotent presence, and they will still roll on, when we with all our hopes and fears are extinguished forever. Such is the creed of Naturalism. If on the other hand we begin where alone, as I say, we can truly *begin*, here and now with ourselves and our actual experience as historical fact, we may reach the answer of Epistemology, which the views of the physical symbolist adumbrate. This is what I call philosophical orientation. We have now to consider it in more detail.

Laws of nature I have said are neither presented realities nor necessities of thought. How then do we get to this knowledge of laws, and what does it imply? This is Kant's problem, with which science has no direct concern and which Naturalism wholly ignores. It is really a long story and the very barest outline must here suffice. We start then, as said, with the tangible, visible, sonorous world, in all its qualitative diversity of particular things and events; but we do not start as passive and indifferent spectators of all this ceaseless change. We have definite wants and corresponding impulses, and a certain primitive credulity leads us to expect again what we have experienced before. We are round men or square men, and only as we succeed in occupying appropriate holes do we find our expectations justified and make a career. A fish out of water has ordinarily no chance of learning that Nature is uniform, though it makes a beginning in such knowledge while it remains in its native element. So in an appropriate environment we acquire familiarities and facilities, experiences and expertnesses, in other words habits, whereby subject and object,

Ego and non-Ego, fit like hand and glove. This is the new philosophy of clothes, which Naturalism turns inside out. Man, it has been said, is the measure of all things—for man. And he measures them largely by finding if they fit him, and he advances chiefly by making them fit, that is by growing himself. Such advance is a series of ventures, a continual struggle: experiments are made first to meet practical needs, and finally to satisfy curiosity, which at bottom is a practical need. So we are told Necessity is the mother of invention, and War or Struggle the father of all things, leaving only the fittest to survive. But throughout we are anthropomorphic: *practically* the fittest for us is what suits us best, and *theoretically* it is what has most analogy with what we are and know already. We find other men, other living things, form an important part of our environment, and their doings we have to reckon with; in the light of these facts we interpret the rest as far as we can. Put more abstractly, this amounts to saying that our entire organon of real categories—substance, cause, and end—are anthropomorphic, projections of ourselves. And as these categories form an organic unity within—as we are active subjects with definite aims—we assume that everywhere in the phenomenal world without we have directly or indirectly the manifestation of such subjects. So far as this fundamental postulate, this demand of reason, is verified, the world is intelligible, and no farther.

But on one supposition and one only are the uniformities which we significantly call 'laws' so many verifications of the intelligibility of things, and that is that—though the laws be inviolable—the knowledge of them can be intelligently turned to account. Now we have just seen that it was precisely through our practical endeavours to turn things to account that their laws were discovered; for laws, it must be remembered, are not themselves realities. Moreover as our knowledge of Nature's laws has increased, our power to control and direct things has increased; and what hinders our further advance is not 'the tightening

grasp of law,' but our outstanding ignorance of it. And why should this progress ever stop? "The heavens declare the glory of Newton and Laplace!" was the boast of science a century ago, and many have been the wonderful inventions and discoveries to which their methods have led since. Yet when rigorously pursued, those methods, we are now assured, shew Newton, Laplace, and us, their humbler brethren, to be mere impotent puppets, having percepts, thoughts, feelings and volitions, indeed, but only as fatally predetermined concomitants of that illimitable mechanism, the workings of which Laplace and Newton were able to an infinitesimal extent to foretell. "But if those conclusions are true," the exponent of Naturalism may rejoin, "and if still progress has already been made, why should not the progress go on: after all what difference does it make?" If those conclusions are true, if we are verily but conscious automata, I reply, then the ground is cut away from the mechanical theory on which they are based: in reducing man and his experience to the epiphenomenal, Naturalism refutes itself. In the first place I must ask you specially to note that we do not at the outset *know* that we are conscious automata. On the contrary, as I have been urging, we appear to ourselves—to say the least—as spontaneously active both in our thinking and in our doing. We are immediately conscious of limits, but not of impotence. The doctrine of conscious automatism is a conclusion, and a conclusion opposed to common sense: we have therefore good grounds for suspecting its premises. And surely enough in these we find the concept of causal efficiency playing an odd rôle. Supposing himself to be occupying a standpoint aloof alike from the mechanism that he takes to underlie phenomena and from the mind to which these phenomena pertain, the naturalist attributes to the former a real efficiency while declaring the efficiency of the latter to be altogether spurious and illusory. Surely this is emulating the feat of the rustic who sawed off the very branch on which he sat! What warrant

is there for the application of this concept of efficiency without, if its internal source is wholly fallacious? The fact is that the naturalist forgets the essential implication of his standpoint. His position is really comparable to the solipsist; is in fact, as we shall see, its psychophysical counterpart. The most he can safely conclude is that other people are only automata. The solipsist does not say: There is no transcending individual experience and therefore I am only a modification of your consciousness. And all the naturalist should say is: I have ascertained by careful experiment and calculation that all Nature is a mechanism, and, as for me your body is only a part of this mechanism, I am forced to conclude that you are at most a conscious automaton. And with that opinion of us we may safely leave him, and continue as he does to make use of the concept of causal efficiency but declining to apply it to an abstract scheme to which it is wholly foreign.

But even when we reject the theory of conscious automatism as only a vague and ill-disguised form of materialism, the manifold absurdities of which are now coming to be universally recognised, there remains a position hardly less extravagant to be considered. I refer to what is known as the theory of psychophysical parallelism. In one possible sense of the words such parallelism is a fact beyond all question: in so far, namely, as there is the closest and most intimate correspondence between mind processes and brain processes, between *psychoses* and *neuroses*, as we say nowadays. But correspondence does not necessarily exclude reciprocal action; and both biology and psychology proceed entirely on the assumption that such mutual interaction is regular and continuous. Nor is there a single known fact at variance with this assumption; whilst without it the vital distinction of *sensory* impression and *motor* response becomes meaningless for psychology, and all intelligible connexion between life and mind is gone. Nevertheless the truth of psycho-neural correspondence so understood is absolutely denied by the theory of

psychophysical parallelism that we have now to examine. This too is a consequence of accepting the mechanical view of nature not simply as a working hypothesis, valid within its limits, but as a complete presentation of the fully-orbed reality; and once again we have the *prima facie* facts of experience discredited on *a priori* grounds: we have Naturalism contradicting science through a faulty orientation and confusion of standpoints. The very phrase psychophysical parallelism is itself evidence of such confusion. We should never have heard of a parallelism between the psychical and the physical, but for the intervention of the organism between the individual experient and the inorganic world. Here in the psychoneural correspondence just referred to we do indeed find a parallelism that goes some way towards justifying the familiar comparison of the one series to the sounds a reader utters, and of the other to the letters that he sees. To qualitative differences on the one side, there are answering qualitative differences on the other: to simplicity or complexity in the first, there is an equivalent simplicity or complexity in the second. In this wise psychosis and neurosis, functions of mind and functions of brain, may up to a certain point be said to be concomitant, keeping time and rising and falling together. But if we resolve the neuron or structural unit of brain into untold millions of mass-points, there is no longer any assignable correspondence between the motions of these and distinguishable experiences or 'states of mind,' less correspondence even than there would be between printed characters and the sounds they signify, when these are decomposed into atmospheric waves. Over against the enormous wealth of qualitative diversity in the one, the other presents only a quantitative monotony of the extremest type. The only hope of reinstating the parallelism that has vanished lies in pulverising mind to psychical dust, so to say, and from this, the logical outcome of psychophysical parallelism, some of the exponents of naturalism do not shrink. There is nothing like courage: it has rid the world of many wild theories.

Though psychoneural parallelism or correspondence is a fact, psychophysical parallelism is, then, plainly a misnomer. Of parallel lines we can say two things. They never meet, and they consist of corresponding points. But it is only in respect to the first of these properties that my experience and mass motions have any analogy with parallels; in this respect they are on a par with say a book of dates and a book of logarithms; and the simile of parallels is no more appropriate in the one case than it is in the other. At bottom, psychophysical parallelism affirms only the old dualism of matter and mind, but affirms it with new emphasis, because, for the mechanical theory, matter is divested of every vestige of quality, and nothing left of its substance save quantitative constants, or of its causality save dynamic equations. But for the old dualism to which common thought and language are adjusted, the interaction of each conscious subject with its objective environment was a fact, though the intervening psychophysical process—in common however with all other cases of trans-eunt action—was a mystery. So far all causal laws are occasional laws. Yet Naturalism, which is no whit better off, denies this basal fact of experience, not because the *modus operandi* in psychophysical processes is inexplicable, but solely because such a process cannot be mechanical, and is therefore necessarily non-existent for its standpoint. This is very much as if a blind man should say there were no such things as colours because he could not feel them; and his argument would be sound enough, if touch were the only sense there was, and blindness therefore no limitation. And in any case touch and sight are mutually exclusive and only brought into relation by the conscious subject, who can both see and feel. The dualism of matter and mind is of this sort, only that instead of two mutually exclusive concretes we have two mutually exclusive abstracts. Till in both cases we transcend these severally disparate standpoints there can be no talk of orientating them, and therefore no statement involving both can be in-

telligible; not even the assertion that both exist at all. And that is all that psychophysical parallelism in the mouth of the naturalist comes to. He essays to describe your organism and your environment—as they are for him—in mechanical terms. You tell him that—for you—all experience consists in transactions with the physical or outer world which he thus describes, and like the blind man who hears of colours he replies that of such transactions he has no knowledge; that is to say, from his standpoint, they are non-existent. *Mutatis mutandis*, we get a like reply from those psychologists who essay to describe this experience as consisting wholly of 'ideas' or subjective modifications, and who therefore also preach psychophysical parallelism. If the naturalist and such a psychologist then proceed to regard their several standpoints as final and complete, in other words to orientate from these, the one is led to conscious automatism and the other to solipsism, as I have already said. Short of this the two standpoints are simply unrelated; and that is all that psychophysical parallelism means till we betake ourselves to Epistemology, within whose wider purview both are immanent. Then we find how far two halves are from making a whole; we see that the psychology of dualism ends in shutting itself *in*, and the physics of dualism in shutting itself *out*, by an imaginary sundering of the one world of experience into two worlds that are alike devoid of reality.

At this point some representative of Naturalism will be inclined to ask: Are we then to assume that energy is not a reality? And no doubt he will be ready to press the familiar arguments for psychophysical dualism which the principle known as the conservation of energy is supposed to warrant. Let us take these points in turn. If the qualities we perceive in our environment and the changes in it which common sense attributes to human purposes and plans are, as we are told, so many transformations of energy, we have no reason, so far, to question its reality. Energy, then, means for us 'the life and activity of the

physical universe,' to quote the words of a distinguished physicist; and to find the best possible *modus vivendi* within it, we may add, is then the practical meaning of all experience. But further, if our percepts are without assignable psychical antecedents—so that we do not look to psychology, say, for an account of the weather—and if our acts are without assignable physical antecedents—so that we do not ask physics to forecast conduct—how can we imagine an impassable gulf to separate this one world of experience into two and leave both real? But what if the conservation of energy gives us no choice? Well then I am afraid even that principle is doomed: but let us see.

Leaving aside the question as to the supposed impossibility of matter affecting mind as only a clumsy and left-handed way of raising the problem of external perception, it will suffice to examine the alleged impossibility of mind acting on matter, and first on the assumption that such action implies the introduction of energy. The principle of the conservation of energy appears in three forms, and in each, energy has a different meaning:—(1) as an inductive generalisation founded on experiment, (2) as a deduction from the mechanical theory, and (3) as a metaphysical first-principle. (i) At the empirical level, from the standpoint of the new science of Energetics, that is to say, there are many forms of energy, and no attempt is made to get behind their phenomenal diversity to the underlying reality common to them all. Experimentally all that is ascertained is that the total energy of a finite and isolated material system is constant: it can, then, only be increased from without. But an influx from the psychical side, however determined, would be an increase from without; and no physicist, I imagine, will be bold enough to attempt to *prove* that such influx—which conflicts with nothing that is experimentally ascertained—is in fact impossible. (ii) For the mechanical theory, energy is not a phenomenon but a conception involved in the motion and configuration of a system of mass-points connected accord-

ing to the classical dynamics of Newton and his successors. Now, making the very large assumption that this theory is adequate to describe all the changes in the external world so far as it is left to itself, it is certain that it must fail to describe its actual course whenever mind intervenes. But surely it was devised solely to describe the world as left to itself: its fundamental assumption is only that all *matter* is inert, not that everything is. The only ground then, so far, for denying that mind can affect a given material system as another material system might do, is that in that case, and so far, the world cannot be regarded as dead. In other words, it is a question of fact, and the question is begged to save a theory. I think it important to observe that physicists are the last people to do anything so outrageous: in our own time Helmholtz, Kelvin, Maxwell—to mention but three great names—have expressly repudiated such extravagance. But I should like to quote a sentence from one who might perhaps have eclipsed them all had he not been snatched from us in his early prime—I mean Heinrich Hertz, to whose researches wireless telegraphy is due. In his latest work he proposed to include the principles of mechanics in a single fundamental law. In a system of bodies which conforms to this law, "there is," he says, "neither any new motion nor any cause of new motion, but only the continuance of the previous motion in a given simple manner. If we were to extend the law to the whole of Nature," he continues, "we should offend against a feeling which is sound and natural. It is therefore prudent to limit the probable validity of the law to inanimate systems. This amounts to the statement that the law, applied to [organic or living beings], forms an improbable hypothesis."^{*} (iii) But now, beyond experimental facts, beyond mechanical ideals, we are pulled up at length by what at bottom is a metaphysical principle. The energy of the universe, say the naturalistic philosophers, is constant and allows of no increase: it is impossible therefore for mind to

*Principles of Mechanics, §320.

add to it. But that is only true, if mind is included in it, for expressed in this form the statement ceases to be physical or even material. It amounts simply to the old Lucretian doctrine: *Ex nihilo nihil fit: in nihilum nil posse reverti.* Robert Mayer, who is perhaps best entitled to be called the founder of the principle of energy, expressly falls back on this metaphysical doctrine: Joule and Colding, his immediate successors—to say nothing of Herbert Spencer—were equally speculative. But, as Professor Poincaré, the *doyen* of modern mathematicians, has said: "If one wishes to enounce the principle in all its generality, applying it to the universe, one sees it, so to say, vanish and only this is left: There is something which remains constant."*

So far we have proceeded on the less favourable assumption that mind must be able to evoke energy in order to control the motions of matter. But change of direction without work is certainly possible within a mechanical system, and there are many physicists who maintain that such guidance by mind is also conceivable. Be this as it may, it is at least certain that we are active beings and somehow control the movement of these bodies we are said to animate. No facts are more immediately certain than these, and there is nothing in our actual experience that contradicts them: from these facts—as we here clearly see—are derived the abstract concepts on the strength of which Naturalism, by a grievous misapprehension of its own standpoint, attempts to question them. Stationed at the very outskirts of the Knowable and intent only on the quantitative aspects of things, like those fabulous beings of geometrical romance, the inhabitants of Flatland, it finds impassable barriers which have no existence in the fuller dimensions of concrete experience. Orientating from this central position, we may retort upon Naturalism with the words of Goethe:—

Das Unzulängliche
Hier wird's Ereigniss:
Das Unbeschreibliche
Hier wird's gethan.

**La Science et l'Hypothèse*, p. 158.

Or, again, with the words of Shakespeare: "There are more things in heaven and earth than are dreamt of in your philosophy."

Having satisfied ourselves then that mechanism is not the secret of the universe; that if it is to have any meaning it must subserve some end; finding everywhere that increased knowledge of Nature's laws means increased control of Nature's processes, we accept the facts of experience in which subject and object interact, rather than the conclusions of dualism, in which mind and matter are two alien worlds and all knowledge an inexplicable mystery. These results make it possible to deal more briefly with our remaining topic, the relation of the physical sciences to the biological. Can we describe the living in terms of the lifeless? Naturalism, which has advanced so far beyond the old materialism as to treat mind as epiphenomenal, still claims life as belonging wholly to the physical domain. I think we may stake the issue on one point. Comparing the characteristics of the physical world as modified by mind with its characteristics when left to itself, let us then decide with which the facts of life, taken as a whole, accord the better. Starting from an uninhabited desert and following the advance of civilisation from the bare underground caves of the pre-Adamite to modern cities with their cloud-capped towers, we note a steady increase in the number, variety, and complexity of objects and processes that we call artificial. At first we find only rudely shaped stones, pointed sticks, hollowed trunks, differing distinctly and yet but slightly from like objects in the desert behind us. As we move on we find rough sun-dried bricks give place to fired pottery of exquisite shapes; coarse wraps of natural fleece or grass exchanged for textile fabrics wrought in wondrous looms. At first we find only natural substances altered in shape and arrangement: at length we have the myriad products of metallurgy and chemistry, such as unaided nature has never formed. Tasks wholly beyond the native strength of many giants, we see in the

end performed by machines that a child can control. The moving energies of wind and water, that, left to themselves, would only level down the surface of the earth, are artificially directed or resisted to subserve human ends: and the stores of potential energy in coal, nitrates, and the like, which nature would denude and scatter, are made to work the engines of peace and war. In short, compared with a horde of naked savages whose raw victuals, meagre resources, and defenceless condition afford a life at best but "nasty, brutish, and short," the inhabitants of a modern city are like beings invested with a vastly superior organism living in a re-created and comparatively perfect environment, where organised division of labour through the products of the highest skill, are secured to all with the smallest outlay of effort. Now this metamorphosis of Nature by human art and industry, though it exceeds the wildest dreams of Fairyland, is yet throughout natural in so far as no new forces or elements are involved in its several processes and products, and the laws of Nature are everywhere observed and obeyed. Yet we know that it is throughout the work of man, not the work of Nature; and that it is even contrary to Nature, in the sense of requiring ceaseless guidance and control.

Let us next compare the organic world with the inorganic, proceeding as before from the lowest forms of life towards the highest. Taking the amoeba as the counterpart of the untutored savage, we find a distinct though comparatively slight difference between its behaviour and that of inanimate particles: in the technical language of physiology, it is irritable and it is automatic. It does not react merely quantitatively and inertly to forces, but qualitatively and purposively to 'stimuli': its motions are not wholly determined from without, but partly from within. Special organs of sense and movement first appear as we advance to multicellular organisms, and when we reach the higher types of these we find a division of labour, a co-ordination and consensus of members and functions, which

has made the analogy between such organisms and a commonwealth so apt and striking. With such increasing complexity there is a corresponding increase in the variety, delicacy, and range of the organism's adjustments to its environment, and again in its control over it. Throughout the organic world we find an inexhaustible diversity of structures and processes equaling or surpassing the inventions of human skill, and all of them, like these, aid in the adaptation and control of the environment and promote the furtherance of life: and they are all of them structures and processes, too, which nowhere occur in the inorganic world outside. Again, contrasting these two so-called 'worlds,' we remark the steady downward trend of the one as opposed to the continuous development and progress of the other—a contrast nowhere more conspicuous than it appears when we compare the dissolution of the dead organism with the building up of the living one. In all this evolution of life we may allow that no new forces, no new elements are involved, that the laws of Nature are everywhere observed and obeyed. But is it not also unquestionable that there is present, throughout, a ceaseless guidance and control, such as the works of mind display? And since we find the manifestations of life merging continuously into the manifestations of mind and advancing *pari passu* with these, how can we separate the two? And since on the other hand we find the sharpest contrast between the processes peculiar to this animate world and those characteristic of the inanimate—the one anabolic, the other essentially katabolic, to use the expressive terms of a Cambridge physiologist—how can we possibly identify the two? The naturalist's claim so to do is made on the ground that there is nothing in all the several processes or products of living things that is physically inexplicable. But that is equally true of the processes and products of human skill, and yet we know that here mind is the efficient and formative principle. And it is equally indisputable that physical laws fail to account for life *as a whole*,

either in its origin or its progress. Can we then doubt that life, like mind, is an efficient and formative principle, and therefore not a merely physical phenomenon?

We cannot talk of life without implying a living individual and an adapted environment, and also along with these the whole class of teleological categories which they involve. From the physical standpoint which Naturalism takes to be primary such concepts never come into view at all. This, as I have said already, is no defect—quite the contrary—but it is assuredly a limitation. *Ex pede Herculem:* to conjecture the whole statue that shall be adequate to the torso that is given. To solve such a problem in the present case would be to ask, What does all the law and order that science discloses require to make it intelligible? But what Naturalism strives to shew is that the fragment is the whole: all there *is* is this mechanical substructure: there is for Naturalism no rational edifice at all. But from the epistemological standpoint we can see not only the fragment but the outline of the whole: we can see not only the limitations of science but also the causes of the mistakes into which Naturalism falls.

THE WESTERN EXPERIMENT WITH PERSONAL INDEPENDENCE.*

BERNARD MOSES.

The course of social growth in the early civilized nations of Europe, as well as in the nations of other races, tended to raise into prominence a limited number of persons. These persons, by reason of their prowess, their intellectual development, their strength of character, or the advantages of their inheritance, assumed a position of superiority and independence which distinguished them from the great body of their fellow-countrymen. This appeared to be a normal result of social progress in all nations, whether in Europe or in other parts of the world, prior to the rise of the modern civilization of Europe and America. The ancient republics discriminated between the superior and the dependents scarcely less sharply than the ancient monarchies. The most enlightened thinkers among the Greeks emphasized this distinction, and found it characteristic of a normal social order. But in recent centuries a new conception of social relations has appeared. This conception rejects the idea of superiority and dependence, and seeks the entire emancipation and complete independence of each individual man, regardless of his inheritance or his intellectual development. It would place the individual man in a position where he would hold only such relations to his fellow-men as might be entered into by his voluntary agreement.

*An address before the Phi Beta Kappa Society of the University of California, delivered May 17, 1904.

The significant experiment in modern American civilization consists in seeking to establish the equal personal independence of all members of the nation. The transition from a state of society involving the old conception to one involving the new has been furthered and supported by unparalleled efforts in behalf of education, and by the creation of governmental institutions under which the individual, and not the clan or any other association of persons, is held to be responsible before the law. It has been supported, moreover, particularly since the Protestant Revolution, by a doctrine of religious individualism and by an ecclesiastical policy that emphasizes the entire responsibility of the individual man for his moral status and his spiritual destiny. The conspicuous purpose of European and American society in recent centuries has thus been to isolate the individual man, and to make him stand forth in the fullest possible independence. This conception and the practical design here involved represent a striking departure from the traditional order that has characterized society throughout historic times, and, therefore, the bulk of mankind has no real knowledge of this Western experiment. What has been done in effecting this social change has been done in contravention of the general practice and the almost universal tradition of the world. The new view of the position of the ordinary man which is seeking justification in our experiment has the sanction of only a few centuries of usage in nations representing only a fraction of the human race. It is to be noted, moreover, that, whatever may have been the individual ideals of the greater part of the members of every nation early in life, on reaching maturity they find their places in the ranks confirmed to them, either by the limitations of their endowments or by the necessity of immediate material support.

These evident facts suggest the question as to the fate of personal independence under normal social growth. We have seen the rise of this quality in the English people, and have observed its influence in determining the funda-

mental features of a great political theory. We have seen it carried from the old world to the new, where, under the conditions of the frontier that make for democracy, it has received a new development and been raised from the position of a theory to become the main article of a dominant political creed.

The zealous Mohammedan conceives of no people that ought not to be brought to a knowledge of, and a belief in, the teachings of the Prophet. The devoted Christian looks beyond the limits of his race, and expects that all men, of whatsoever origin, will ultimately accept the Christian doctrine. And thus the believers in the equal personal independence of all men have held their personal faith to be worthy of universal acceptance, and destined to make the circuit of the world. This form of political faith finds its most vigorous adherents in America, and where it prevails certain social topics appear to be removed from the field of scientific inquiry. When it is affirmed in the American's political creed that the personal independence achieved by the few in the older civilizations is to be achieved and maintained by everybody in America under the new régime, it appears to be difficult for the adherent of this view to find reasons for a further investigation of the subject. And the social growth of the English people in England, Australia and the United States seems to strengthen his view. In the pursuit of a more enlightened government and by the influences incident to migration, the English people during the last eight centuries have advanced toward a larger measure of personal independence.

It is not to be doubted that there is something in English blood that has furthered the advance toward personal independence and democracy, but without the circumstances of migration, without the unconventional life of the frontier of Australia and America, without the sparse population, the almost universal devotion to agriculture, and the essential equality of material possessions, this remarkable

development would apparently have been out of the question. For in England, where these conditions were wanting, but where the stock out of which grew the colonial republics of America continued to exist, there has remained somewhat of the feudal spirit and a recognition of the desirability of maintaining that inequality which "lies imbedded in the very base of the English social structure." The democratic spirit of America is thus not altogether a matter of blood. It was born of the free life of the colonial farms, of the equality which necessarily prevailed among men of the same occupation and of the same grade of wealth; and it was supported by the personal independence that was developed in men who stood in large part alone on the edge of the wilderness.

At this point arises a question involving important considerations respecting contemporary social tendencies, or respecting the prospects of personal independence in modern society. There is here suggested, moreover, the somewhat widely accepted view that Western society has entered upon a new order of social growth, and that the social differentiation which has produced everywhere else the relation of superiority and dependence is not to appear here. The fact that a large measure of independence has been achieved by the inhabitants of Europe and America does not finally answer the inquiry. The superiority created and upheld by the favor and protection of the state in the older nations, through the granting of titles and the formation of artificial distinctions, and much of the consequent dependence, disappeared when men were thrown upon their own resources in a new country. The environment of the frontier tended to set aside the traditional relations of European life. A society without the old conventional obligations and restraints was formed, and a starting-point for a new social growth was established.

Removed from the domination of a superior and the influences of ancient tradition, society in the United States

in the early decades furnished an excellent illustration of normal social growth. It increased its wants and sought their satisfaction. In this process it produced a wide range of occupations, prepared its members for a multitude of different functions, developed in them unlike talents, introduced rivalry and competition, established the conditions of brilliant achievement and lamentable failure; in a word, advanced from simplicity to complexity and from uniformity to variety. The native inequality of powers among different persons under conditions of freedom manifested itself in inequality of achievements, and laid a foundation for effective social distinctions regardless of the attempts of governmental authority to secure equality before the law.

This result represents a step in social differentiation, and the beginning of a movement to bring about inequality on a new basis. When, under the presupposition of this movement, two men of unequal powers start from the same circumstances, and at the end of the race one commands a large amount of capital and vast resources, while the other has no means of living except by working for his former companion, or for some other person of similar standing, a certain relation of superiority and dependence has in fact appeared. And the movement toward this end is independent of resolutions or personal decisions as to what ought to be the form of society. The forces that are determinative in this matter are not conscious forces, but such forces as proceed from man's relation to nature or are the resultant of many purely conscious efforts directed to other ends than that which appears as the general result.

The conscious striving of our race in past centuries, and particularly in the early phases of American life, was to make the individual man stand forth in complete personal independence, with no claims on the more fortunate and no obligations toward the less fortunate. In this position he appears to have broken with his ancestors, and emancipated himself from their traditions. He has

renounced the ties that were acknowledged in the earlier phases of society. No man is his master or superior, and no man is his slave or dependent. The authorities of government have recognized his claim to independence, and clothed him with rights for the defense of his pretensions. But when the goal is reached, and the individual man has achieved the full measure of his personal independence, there is reason to doubt his ability in a large number of cases to maintain his position; there is also reason to doubt his willingness to accept the legitimate consequences of this independence.

It is usually assumed that neither of these points is debatable; that they are definite articles of the social creed of a progressive nation; and that the complete personal independence of which we boast is a permanent acquisition. But such a position is entirely untenable, for even progressive nations have not reached finality, either with respect to the form of society or the organization of the government. The very fact that nations are progressive implies that certain parts of their social organizations will yet be modified, and that the relative positions of their citizens are destined to be changed.

It is not unusual to find two incomparable views held by the same members of a given society. One of such views held by Americans is that existing institutions in this country represent a permanent ideal; another is that the society in question is a progressive society. This contradiction in concrete form is presented by those who hold that in the establishment of personal independence a final end has been reached, and that nevertheless the society under consideration is progressive. They are persuaded that their social forms and political institutions represent in some sense a final achievement; and they hold it to be patriotic duty to adhere to these forms. At the same time, they hold with equal firmness that this is a progressive nation. Now, if the nation is progressive, its institutions and its ideals must necessarily undergo change; but, on the

other hand, if these ideals and existing institutions are not destined to be modified in the course of time, then it is not proper to place the United States in the list of progressive nations. But the suggestion involved in the last alternative runs counter to all the evidences of our history. We have moved onward through successive phases of social growth, and there is no reason to suppose that our social development is complete. We have apparently not yet reached the point where nations stop growing and die.

Therefore, under continued progress we may expect that ideals now influential will be modified, and that some of the relations of individual persons to one another and to society will be changed. At a certain point in our industrial history the common man of America represented the personal independence achieved by the progress of our race. He was completely emancipated. He was not affected by the traditions of serfdom. He recognized no obligations to a superior. He either furnished his own occupation or was bound only by the terms of a voluntary agreement with an employer. The terms of this agreement limited also the employer's obligation, and they were binding for only such periods as the two parties might accept. Each of the representatives of these two classes respected the independence of the other. Here culminated the personal independence of the American, particularly the independence of the American laborer. His position is the result of a conscious struggle against a natural tendency. After this the forces of our colonial and frontier environment that made for equality and independence were gradually and in a measure superseded by the forces observable in social growth that make for inequality and the interdependence of more or less distinctly marked classes. And this subsequent growth of society has been such as to tend to make the laborer feel the inconvenience of his detached condition. While his strength endured he rejoiced in being his own master; he rejoiced, moreover, in freedom to determine his own destiny. But when his evil

days come, and his powers are inadequate to his tasks, he discovers that his position is not all that it seemed in the days of his strength. He is no man's client, he is dependent on no master, and no one is under obligation to carry him over the non-productive years. In the period of his weakness and broken health he sees what appear to him as the shortcomings of a social system that presumes complete personal independence. The growing inequality appearing in natural social progress imposes upon him an increasing handicap, and makes the attainment and maintenance of real personal independence more and more difficult. He foresees the need of support in the approaching days of possible failure. The theory underlying our social order is that every man in his effective years will provide for the days of his misfortunes and his decline; and this, the American laborer sees, is not justified by the facts of general experience. He sees that an adequate basis for support is never acquired by more than a small part of the world's inhabitants. The claims his ancestors had on the good-will, the protection, and the positive care of a superior are dissolved. He is his own master, and he carries the risks of independence. But, in spite of the fact that he has attained a position towards which his race struggled through many generations, he finds himself after all liable to fall into a state of dependence. In the first instance, when the obligations of his employer cease, he falls back on the members of his family for support. This draws women into the proper vocations of men, and often throws excessive burdens upon children at a time when they ought to be under training or left free to complete their intellectual and physical development. Deprived of this opportunity, they reach maturity of years without maturity of either mind or body; and thus they start the population on a course of degeneracy.

With respect to this phase of life the nations of most advanced individualism show little improvement over the nations not yet emerged from the feudal condition.

Authoritative reports on the condition of the poor in England in the nineteenth century revealed a state of squalor, want and subjection scarcely matched in the feudal age on the continent of Europe. Complete personal independence brings to the individual man the possibility of betterment, but it brings also the possibility of hopeless and helpless deterioration, and this opportunity for the freest differentiation introduces the forms characteristic of mature social growth everywhere.

When the influences that made for superiority and dependence were temporarily counteracted, and the individual man attained independence, setting aside the mutual obligations that previously existed, an attempt was made through charity to bring about the recognition of a new obligation. It was seen that the position involved in the idea of personal independence in many cases could not be held, and the Church appealed to the more fortunate to help bear the burdens of the less fortunate. Men were urged to do, under the promptings of charity, what they were, in a certain sense, released from doing by the dissolution of an old social order.

Conspicuous also among the efforts that have been put forth to furnish relief from the consequences of complete personal independence are those that have resulted in the formation of associations for mutual assistance. Men have been willing to make present sacrifices to avoid the inconvenience of ultimately standing alone. They have organized benevolent societies and found in them corporate superiors on whom they could in a measure depend. But these associations have not fully satisfied all demands. The sense of personal independence is not complete unless one is conscious of having determined his own position. No one, therefore, who represents the modern spirit of Western nations, in which competition is the dominant idea, is entirely satisfied with any association for fixing his relation to his fellow-men that does not involve a belligerent purpose; but any social organization that is effective pre-

sumes a certain subordination of the individual man to the corporate person. Thus the way of escape from dependence on a personal superior leads to subjection to a corporate superior. Men for whose independence a centuries-long battle has been waged find such subordination necessary for the attainment of their individual purposes under the existing social order.

The common men of the middle age of civilization gather willingly around their superiors and give their devotion and their services, not to further the cause of individual independence, but to magnify the prestige of their leaders, from whom they derive a reflected glory. The great majority of the men of modern times, in order to avoid the inconveniences of personal independence, create for themselves corporate superiors in the form of unions or brotherhoods, and assume towards them in some respects the attitude of dependents toward personal superiors. They look to the unions to fight for them battles which individually they could not win. Like one who is subordinated to a personal superior, they relinquish the advantage of independence for the sake of the other temporary advantages which, without union, they might not obtain. But the new superior is scarcely less imperious and exacting than the old. When the new corporate superior orders men to cease working, they obey, although their families are in need of bread. When their sons are prevented by the new superior from becoming apprentices, they make no effective protest, but submit to seeing them grow up in idleness, and in their idleness run the risk of becoming criminals. The gaining of these temporary personal advantages is attended by certain results that appear as disadvantageous from the standpoint of the Republic, which is securely founded only when it is based on personal independence.

The fact that the corporate superior sometimes reaches decisions by the votes of its members is not a sufficient guarantee that it will never act tyrannically or lay heavy

burdens upon its subjects. On the contrary, some of the most complete tyrannies that have ever existed have been constructed by popular vote, and upheld and confirmed from time to time by an almost unanimous plebiscite.

Under the earlier order, the dependent, when the evil days came, might receive a measure of support from his superior. Under the new order, the dependent, when the evil days come, receives a measure of support from his corporate superior. Under the old order, persons not belonging in any list of clients or dependents were scorned and rejected. Under the new order, persons not belonging to any union or brotherhood also suffer a social or industrial handicap. Under the old order, it was the business of government to ameliorate the condition of the rejected class. Under the new order, the government has a similar task with respect to those not under the patronage of the new superior. If a man wishes to work and finds an employer willing to compensate him for his services, this may represent the only opportunity open to him to secure well-being or happiness; and if the government to which he has sworn allegiance fails to furnish such protection as will enable him to make use of this opportunity, it fails at a point so vital as to call in question the fitness of the government for the work properly devolving upon it.

The later decades of the English colonial period in America and the earlier decades under the Union constitute the most brilliant period in the history of the struggle for personal independence. The superiority upheld by the customs and privileges of the nobility and by the etiquette of officialism had been left behind. The free life of the country, the responsibility for the government, and the absence of traditions gave to the inhabitants of the United States a larger measure of personal independence than was ever enjoyed by any other people. But the rise of modern industrialism has opened new prospects. It has put into operation forces that make the perservation of personal independence for the bulk of the nation prac-

tically impossible. Employées are between alternatives, neither of which conduces to their independence. In attempting to escape from the hard exactions of employers, they fall under the despotism of the directors of the unions, and this despotism is likely to be burdensome because those who wield it are not accustomed to the responsibilities of power and are untrained in its exercise. Although these corporate superiors are created by the employées, they are still superiors, and orders are sometimes issued by them which a fully developed tyrant would hesitate to issue, lest an outraged people would turn and destroy his authority.

But the new industrial system, with its inevitable accompaniment of increasing inequality, and with its organizations under which employées seek refuge, is not the only obstacle to the perpetuation of personal independence. In the first place, the traditions and instincts influencing the bulk of the human race are such as make for submission; for, taken all together, in all nations and at all times, men have generally been in positions of dependence, and the habit, through heredity, has become instinct. In the second place, there are relatively very few who are moved either by their traditions or by their ambition to dominate their fellows. Except in rare instances, moreover, the desire for equality exists in the human mind only in the form of an ambition to rise to a plane occupied by persons whom one conceives to be superior in position to himself. But, speaking generally, whenever a person, even an American, has attained a position where he can command the services of others, he appears willing to assume the attitude of a superior toward those from whose ranks he may have come. Thus the sentiments of neither the subordinated nor the dominant fraction of the population present any considerable hindrance to the differentiation of American society into classes along the line that has been traced by the development of other nations.

The line of thought here suggested may throw light on the realization of that feature of the American ideal which

prefigures the attainment and maintenance of personal independence by all the citizens of the Republic. In this light, the unusual development of personal independence on the part of the common man in the United States appears as the result of the exceptional circumstances under which American society has grown. The movement was, moreover, furthered by the fact that in the migration, in this case as well as generally, it was chiefly the more restless and venturesome spirits that dared to undertake to make their way in a new world. Observing the exceptional movement in the growth of society here during the brief period of American history, we have sometimes made the mistake of supposing that the unusual tendency of the early decades represented a perpetual and universal tendency; but the later progress suggests that when our environment ceased to be extraordinary, society in the United States tended to reproduce the features which are common to maturing society everywhere.

An appreciation of these facts will lead inevitably to a truer estimate of the relative worth of the different members of the society with respect to the affairs of government. The conviction that all men in the Republic were destined to maintain the same degree of personal independence apparently left no reasonable ground for discrimination in bestowing political privileges. Under this delusion the people of the United States were led into the error of bestowing the full rights of active citizenship upon millions of freedmen whose only traditions were either those of barbarism or of the abject dependence of slavery.

The ancient Greeks recognized, as we do, that republics are founded on the presumption of the personal independence of their active citizens. They recognized, moreover, as we are beginning to recognize, that the growth of society tends to separate men into classes, and that the members of some of the classes fall inevitably into positions of greater or less dependence. The Greeks had thus before them in founding and maintaining the republics,

essentially the same problem as that which confronted the people of the United States. But the Greeks followed their own method. All persons or classes of persons liable to become dependent were excluded from the exercise of political power. The Greeks thus set for themselves a comparatively easy task. They made their republics embrace as active citizens only those classes of persons who had been shown in the growth of society to be competent to maintain their personal independence. They adjusted their institutions to society as they found it. On the other hand, the makers of the American republic conferred political rights upon the members of all classes. At the same time they undertook to nullify that social tendency which establishes the relation of dependence and superiority. The task appeared not especially difficult to those who originally had part in the work of constructing American political institutions, because under the circumstances of that time powerful temporary forces were at work towards the realization of the American ideal, and it was assumed that these forces would operate permanently.

From the advantage of our present position, with the achievements of the nineteenth century separating us from the origin of the Republic, with our larger knowledge of the development of society under freedom, we are able to see that certain forces incident to a new country with a sparse population have ceased to be effective under the changed environment, and have been in large measure superseded by the forces of natural social growth. The expectation that the traditional social tendency would be permanently set aside here has not been realized. The influences that made some of the Greeks dependent, and thus unfit, in the opinion of the philosophers and politicians of that country, to exercise political authority, appear to have force at present in the United States.

Thus one of the important problems which the founders of the Republic had to solve—the problem as to what persons should be granted political privileges—is not much

nearer a permanent solution than it was a hundred years ago. The action already taken in the United States to admit all men to the enjoyment of political privileges, was taken on the supposition that the American ideal of personal independence would be realized and maintained. The experience of later decades, and a fuller understanding of the characteristics of normal social growth, lead inevitably to a modification of this ideal and a consequent modification of practice. That the American ideal has already undergone a certain modification in the last decades may be seen from the general approval that has been accorded to the recent effort made by certain Southern States to deprive the ignorant negroes, as well as the ignorant whites, of the privilege of voting. Forty years ago such a movement would have met with indignant protests by a majority of the citizens of the Northern States.

The founders of the Republic believed that all men were or would become equally free and equally independent, and their belief was supported by the state of society and by the temporary tendencies that prevailed when the constitution was formed. But, in the course of time, with the rise of industrial competition and with the introduction of a vast alien population from Europe, the sentiment of equality was weakened, and personal independence in many cases could not be maintained under the severe struggle for existence. There thus appeared a condition in which the formation of class distinctions was inevitable. The nations that are brought into relations with the United States in its new position as a world-power are unquestionably destined to be very greatly influenced by this nation as to the form of their institutions and the tone of their society; at the same time, standing between the two most powerful centers of social influence—Europe and the Far East—and drawing from them large numbers of their inhabitants, with more intimate relations to both of these centers of influence than ever existed before, the society of the United States will inevitably absorb some-



THE CAUSES OF GERMAN EMINENCE IN PRODUCTIVE SCHOLARSHIP.*

EDWARD B. CLAPP.

American scholarship is eclectic, though it is rapidly becoming independent. While we admire and seek to emulate the sound method and thoroughness of German investigators, we are not insensible to the merits of English conservatism and good sense, or the charm of French clarity, style, and *esprit*. Of late, warning voices have often been uplifted in protest against what has been called the excessive Germanizing of American methods in the higher university training. This reaction sometimes goes so far as to deny that we have any longer anything to learn from Germany, and to assert that German society and life have been so far commercialized during the reign of the present Kaiser as to sap the vitality of the higher scholarship, to lower the ideals of German university training, and so to degrade from her high position the land which has so long been the mother of learning. The limits of my time do not allow me on this occasion to discuss the justice of this view. I must content myself with the mere expression of my own opinion, which is based on considerable recent observation. As a result of this observation, I am convinced that we shall be in danger of serious error if we cherish the belief that America has overtaken Germany in most lines of scholarly investigation. Whatever the situation may be as regards

*Read at a recent meeting of the Association of Graduate Students.

some of the applied sciences, or even medicine, I am inclined to think that in pure science, as well as in most branches of historical and literary research, Germany is still at the front.

Consider for a moment the names of a few representative German scholars of the present generation—such names as those of Zeller and Paulsen in philosophy and pedagogy, Wundt in psychology, Böhm-Bawerk, Schmoller and Conrad in economics, Brugmann and Delbrück in historical grammar, Delitzsch and Wellhausen in Semitic philology, Mommsen and Wilamowitz in classical philology and history, Ten Brink and Sievers in English philology, Klein and Hilbert in mathematics, Helmholtz in physics, Weissmann, Von Breyer and Ostwald in chemistry. Most of these men are still in the full tide of their activity. A few are dead. But their names alone are sufficient to remind us that the primacy has not yet passed away from Germany, and to warn us against too rose-colored a view of our own achievements. The progress which American scholarship has made during the past thirty years may well fill us with pride, but we still have much to learn from the men who have contributed so essentially to the training and inspiration of most American scholars of today.

It is not our disposition as Americans to be satisfied permanently with the second place in any line of activity in which we exert ourselves. And he who has the will, and feels within him the power, to be first, cannot fail to inquire how it has come about that these men, our teachers and honorable rivals, have attained and held for a century their high position in the world of scholarship.

It may be worth our while, then, to spend a short time in discussing the causes of Germany's eminence in scholarly research. The subject is a broad one, and I can only touch lightly upon a few points out of the many which suggest themselves. Nor can I stop to add the shading, to modify my statements by exceptions and counter-consider-

erations, or to discuss minor currents or cross-tendencies, in opposition to what I describe as the general condition of scholarly life in Germany today. I shall attempt only to give you the broader facts, but I ask you to believe me when I affirm that they are the characteristic facts, and represent correctly the chief and most important features of our theme—that the many exceptions and counter-facts are comparatively unimportant, true though they may be.

At the outset, before we speak of strictly educational conditions or methods, I think that we must admit that much of Germany's eminence is due to inherent racial character. The Germans are a strong and energetic people, with immense capacity for labor, joined to unusual patience and willingness to submit to discipline. While these qualities are to be found separately in many other races, there are few peoples which unite these three elements of success so fully as the Germans. The remarkable power and efficiency of Germany's military organization, an organization which has perhaps never been equalled in the world's history, is a familiar illustration of the effect of these characteristics. Scholarship may seem to be a field of activity far removed from war, and yet the scholar, like the soldier, must be docile in accepting a long and strenuous course of discipline, patient in labor, steady in purpose, and energetic and ingenious in the search for new methods and new results. The American student, like the American soldier, is full of dash and self-reliance and resource, and we cannot help believing that, man for man, he could hold his own against the world. But in discipline the German is probably his superior, and in operations on a large scale discipline counts.

Then, too, some importance may perhaps be ascribed to the geographical position and history of Germany, set down in the heart of Europe, open on every side to the influence of new ideas, not protected by the sea, like England, or by her own vastness, like Russia, or exhausted by too long and too feverish an activity, like France. Ger-

many, moreover, has not been dominated by an ambitious priesthood, like Spain and Italy, or riveted in the chains of Calvinism, like much of England, Scotland and New England—Calvinism, a faith which has stimulated much that is highest and finest in human activity, but which is too rigid and unyielding to be entrusted permanently with the control of a nation's thought.

Influences such as these have doubtless had much weight in determining the character of the German mind, but their full discussion would detain us too long from certain more direct and practical considerations which I desire this evening to emphasize. But before passing to the subject of the organization of education in Germany, I must touch briefly upon a feature of German scholarly life which may appear to be purely external and unimportant, but which I believe to be worthy of a moment's thought. I refer to the relation of the scholar to the social life of the community about him. I remarked a moment ago that the scholar must be "steady in purpose," fixing his eye once for all on a single goal—the goal of scholarly success. This is precisely what the German scholar does. His life is so planned and directed that he can devote himself to his work with single-minded energy. The German professor is aware that his reputation and standing in the university and in the community depend solely on his ability and activity as a scholar and teacher, and hence he is not tempted to waste his energies on side-issues of any kind. The simplicity of his life, and that of his family, impresses the foreigner most forcibly. In dress, in style of entertainment, in social activity of every kind, he feels no temptation to strive to emulate the luxury of his neighbors in less self-denying professions. He knows that he is judged by a different standard from theirs, and that if he performs successfully his work as a scholar, he is sure of the highest respect from every one with whom he comes into contact, quite irrespective of all other considerations. There is probably no country in the world where the occu-

pancy of a professor's chair in a university, and the assumed possession of unusual learning which goes with it, is so highly honored as in Germany. Moreover, society in Germany is still, to a certain extent, organized on an aristocratic basis. Class distinctions are still somewhat sharply drawn, and men are expected to remain in the class in which they belong. The scholar is freely honored with a high, and perhaps an exaggerated, deference, by all classes of society, even if his coat be thread-bare, and if he lives in an attic. His position is secure without an effort, and, on the other hand, any attempt on his part to strengthen himself in a line of social brilliance not his own, would only make him ridiculous. The delights and the tortures of social ambition are alike unknown to him, and he is able to give his full strength, undistracted and undisturbed, to his proper work. The increased momentum which he gains by this more complete absorption in study throughout a long life would be difficult to overestimate. It is undeniable that to produce a given number of units of high scholarly work, amid the distractions of American life, requires a far greater natural endowment of ability and energy than to accomplish the same results under German conditions, so that really great scholars are proportionately rare among us. All honor to the few who attain to real eminence in spite of unfavorable circumstances.

At this point, I must remind you that I am discussing the *causes* of German eminence in productive scholarship, and not drawing the balance between university life in the two countries in general. Many of you will be inclined to say that the German professor is narrow and contracted as a man, with no broad outlook upon life, but with myopic eye fixed forever on the pettiest details of his trifling specialty. You may think that the American scholar, living somewhat more in the bustling world, is after all the better man. This may, or may not, be true, but it is, at any rate, aside from the present question. We are occupied solely

with the effort to discover *how* the German investigator attains his marked success, and it is clear that one important element in the answer to this question is the fact that his life is consecrated with unusual devotion to a single purpose. Admitting that this is, for most men, the price of eminence, we are still at liberty to hold that the price is too high, and that we prefer to have respectable scholars, who are, at the same time, cultivated men of the world, rather than prodigies of learning whose lives are narrowed by excessive concentration. Whatever may be our decision, the relation of cause and effect is clear and undeniable.

But I must hasten on to the consideration of German education as an organized system. The German university student who is ambitious to become a scholar spends from three to five hours per day in the hearing of lectures. These cover a large number of subjects within his chosen field, and furnish him not only information, but also a concrete illustration of how a definite theme should be mastered and discussed. For these lectures he does little studying. His leisure time he devotes to private reading of the widest range, laying thereby a solid foundation for future scholarship. But the central point of his work lies in the seminar. There he meets weekly with his professor and a small number of the ablest and most mature students, for informal and intimate discussion. There he reads his own carefully prepared papers, in which he is expected to take up a narrow and definite subject and go to the bottom of it, exhausting every available source of information and testing every scrap of evidence which has been brought to bear upon the problem presented. These papers are criticized with the utmost severity by professor and by fellow-students, and he is a luckless man who makes a statement which he cannot prove, or accepts evidence which cannot stand examination.

We are accustomed to think of the seminar as the key-stone of the German system—as the place where Germany trains the scholars who are to extend the boundaries of

knowledge during the coming generation. This opinion is probably correct, so far as university education alone is concerned. It is, in fact, so plainly true that we have made an effort to introduce the seminar into our own universities. Many of our so-called "seminars" are but feeble imitations of the original. But it would be unjust to say this of all. To take a single example from my own line of work, I have no doubt that Professor Gildersleeve's seminary at Baltimore has been for almost a generation as true a seminar as exists anywhere on German soil. Let us assume, then, that the seminar is the essential feature of German university instruction, and that the seminar can be, and in many cases has been, successfully introduced into American universities. Have we solved the problem, and have we nothing further to do but sit at our ease and watch the system work, till it produces scholars as numerous and as eminent as those of Germany?

Before we accept this comfortable belief we must ask one more question. What is the preliminary training of the German student—the training on which the university and the seminar are based? And here we reach what is, in my opinion, the vital element of Germany's scholarly eminence—the German school. The German student, before he enters the university, has been subjected to a preliminary training which for thoroughness and severity is unequalled in the world. He has been for nine years, from the age of nine or ten to that of eighteen or nineteen, a pupil of the gymnasium. His studies have been strictly prescribed, and have been conducted with the sole object of giving him the soundest mental discipline, and the broadest and most accurate foundation for his future work. The course of study and all the chief regulations of the school are established by law—a law which is the work of skilled educators, so that the school is entirely free, not only from political interference, but also from the influence of the passing whims of public opinion. The teachers are without exception men who have received a thorough

university training. Most of them are doctors of philosophy, but all have passed a state examination which is more feared than the ordinary doctor's examination. They are men who have gone into teaching as a life work—men with high professional *esprit du corps*, who give their whole strength to teaching and to study, absolutely undistracted by local polities, or side-issues of any kind. Their scholarly attainment is well illustrated by the familiar fact that when any one of us has occasion to buy the latest German book on any scientific question, it is almost as likely to be the work of a gymnasial teacher as of a university professor.

Under such men, and in such an atmosphere, the German boy passes the whole formative period of his life. His course of study is a unit from beginning to end, no time is wasted on trifles, but no time is spared when thoroughness is at stake. Such being the case, we can scarcely wonder that his attainments, at the age of eighteen or nineteen, when he enters the university, are already considerable. The chief advantage of his training is its extraordinary thoroughness, but even in the extent of ground which it covers it excites our wonder. I happened to travel for two months, not long ago, with a young German who had just graduated from the gymnasium and was intending to enter the university as a student of law the following autumn. He was just under nineteen years of age, full of activity and spirits—a normal, average youth, of no especial ambition to be a scholar. In the course of many long drives or mountain scrambles in Greece I gradually learned so much of his preparatory training that I became interested, and questioned him till I was fairly familiar with what he had done. Leaving out of view the matter of thoroughness, which is a German specialty, he had studied algebra, geometry, and trigonometry; chemistry and botany; German, Roman, Greek, and general European history; French for four years; English for two years; Latin for nine years, and Greek for six years, the

latter at the rate of six hours per week for the whole six years. Such a record at eighteen years makes one gasp with astonishment, but when I asked the young fellow if the work in school had not perhaps been too severe, he answered: "Oh, no; we had plenty of time for all kinds of nonsense."

It would be easy to spend a whole evening in discussing the German gymnasium. It is a fascinating subject to anyone who loves thoroughness and discipline. I should be glad to speak of some of the gymnasial teachers whom I have met; of their great attainments, their high ideals, and their profound earnestness and seriousness in their work. Plain, unworldly men they sometimes are, whose habits and manners and appearance may impress us as quaint and homely. But they love learning with an enthusiastic and consuming love, and when the German boy has been for nine years under their instruction, it is no wonder that he knows something, and knows it well, and that he is prepared, in most cases, to profit by the wide opportunities and absolute freedom of the university.

To sum up the results of this very hasty discussion, I have tried to show that the eminence of Germany in productive scholarship is due in some measure to the sturdy vigor of the German race, to their willingness to submit to discipline, and to the fact that German scholars lead a life of simplicity and single-minded devotion to scholarship. And as regards the German educational system, I have expressed the opinion that while the seminar is rightly held to be the central feature of university instruction, yet the seminar alone could not produce the results which it does produce, were it not based on the training given in the German school, a training which I believe to be unequalled for vigor and thoroughness and for its power to take hold of the young mind in its formative years, to inspire a love for learning and lay a solid foundation for future scholarship.

IN MEMORIAM, MARIUS JOSEPH SPINELLO*

CHAUNCEY WETMORE WELLS.

Marius Joseph Spinello was born in Northern Italy in August, 1874, the son of Giovanni Batista and Madelina Spinello. When Marius was eight or nine years old his parents came to America and settled in New Haven, attracted, I suppose, by friends of theirs among the large Italian population there. Some twenty thousand Italians, I have heard Marius say, live in the neighborhood of old Worcester Square, off the main lines of traffic. They have given life and color to the low-studded, close-shuttered houses of the old water front, and they have placed a statue to Columbus in the quiet square itself, almost under the belfry of old Saint Paul's Church.

Here our friend lived during his school and college days. His father, a house painter by trade, died in Marius's boyhood. Of him Marius used to speak to some intimate friend as of a man of noble heart and large intelligence. Of his mother I seem to have heard him speak many times, but always to this result: "I wish you knew my mother." She survives her brilliant son, but in such feeble health that they have still kept the manner of his death from her.

Marius attended the Hillhouse High School in New Haven and entered Yale College in September, 1892. I

*Biographical sketch read at exercises in memory of Mr. Spinello, October, 1904.

cannot find that he was much known in college during his Freshman or Sophomore, or even his Junior year. His circumstances forced him to live at home, and although his schoolmates were a considerable body of the college class, yet they soon became merged in the class as a whole, sharing the common life of the campus from which Marius because he lived in a remote quarter was partly cut off. The first-divisioners met him in class, for he was a distinguished scholar from the first and marked by the Latin Faculty. Looking over his school and college text books within the last two months I have been surprised to find how early he began to make notes in Latin. He ever loved Horace and Vergil. I have heard him quote many an ode of Horace verbatim, and line upon line of Vergil. He became later a contributor to *Praeco Latina*. Doubtless some of his friends in Berkeley have preserved a graceful note or two penned in most correct Latin. He was graduated in 1896 with special honors in Latin and French. He was now well known to his classmates through the free-hearted life that centers round the Senior fence; and wherever known, beloved.

Two years he spent as instructor in Latin at St. John's School, Manlius, New York—years of earnest and successful endeavor. Then he returned to Yale for a year in the Graduate School as a student in Romance languages. In this year his master, Professor Luquiens, died, and the affairs of the department being, as always in such cases, unsettled, Professor Luquiens' promise of a fellowship to Mr. Spinello could not be redeemed. But the acting head of the department, a most exacting scholar, paid him an unheard-of compliment by calling the attention of his graduate students to Mr. Spinello's Latin writings then being published in *Praeco Latina*.

Mr. Spinello embarked at once for Paris, there to study under the late famous scholar, Gaston Paris, Professors Morel-Fatio, De Job and others. His year in Paris was the most formative and profitable of his life. He came to know

the French spirit in life and letters; he strengthened his hold upon Italian literature, then as always, the study of his choice, and extended his studies into the Spanish language and literature. He spent much of his spare time among old bookshops, and there made a collection unusual in scope and quality for so young a man. Past question he would have taken a brilliant degree at the University at the close of his year but for an illness that was like to be fatal.

Upon his return to America he spent a year as tutor in a southern family. In the spring of 1902 he accepted an assistantship in Italian and French in our University. He married in June of that year Alice Boon of Syracuse, and came at once to Berkeley to teach in the Summer School.

His life in Berkeley as a teacher and member of the community is well known to us all. He won the confidence of the head of his department, the late Professor Paget, and when the latter's health failed Mr. Spinello was asked to take charge of some of his more advanced courses. He made his students feel the power and dignity of the French tongue. They responded heartily, and heartily did he appreciate that response. He used to take copies of French exercises to his friends, with such enthusiasm over their excellence as if some one of them had been a new book of note.

I suppose it was this quality of his, persistent and indomitable as it was, that marked him as a teacher, scholar and man. For a teacher nothing is so highly to be prized, for no other quality is so sure of its response and of such a response. For a scholar such enthusiasms as our friend's are sources of strength, if also of some dangers. Though a well trained philologist, he ever kept his warmest interests for literature, and his literary appreciation was as yet marked by sympathy and fervor and passionate belief, rather than by careful and cold criticism. We must all, I think, agree that even here Mr. Spinello had chosen the better part, that he followed a correct instinct in interpret-

ing literature as human and warm with life rather than as a mechanical product of pure intellect.

This passionate loyalty of his became in his daily life, with his colleagues and neighbors and family, generous consideration, tender regard, chivalrousness. And it was these services offered spontaneously and quite without calculation which won him a circle of friends such, it has been said, as perhaps no newcomer in this community has ever possessed. It included his chief, his neighbors, his students, marketmen and laboring men; Professor Paget died in his arms. To speak of this result is to say that his nature, like all high natures, was touched with a fine emotion that ever played about his character. It gave that rare beauty to his handsome face.

Being thus devoted, he could not but be brave. He came to Berkeley upon a somewhat quixotic enterprise, almost unknown here and without a record in another college, to prove his right to a university position. How amply he proved it is known to us all, but it could be known only to friends how much of fortitude went to the proving. In his second year he undertook almost single handed the production of Racine's *Phèdre* as part of the dramatic festival upon the dedication of our Greek Theatre. It was a signal triumph of sheer bravery against odds. Two of us, his fellow-collegians, were among the first to congratulate him; he lifted us fairly off our feet in an eager, boyish hug, crowing the college cheer.

So much alive he seems that one still expects to meet him any day in the college hallways or upon the campus walks. Even the still room where his books were but lately ranged upon the accustomed shelves seemed but to miss him for an interval. You half thought to hear quick footsteps upon the stairs and glad greeting. We have to mourn our own bereavement and the manner of his taking off, and for him a brief hour of pain. But it is a real comfort, indeed, a satisfaction, to know that one who loved to live so could pass out of life still with the heyday in his blood and before the pulses had slackened their exulting pace.

UNIVERSITY CHRONICLE.

UNIVERSITY RECORD.

JOHN A. BREWER.

EXERCISES TO THE MEMORY OF INSTRUCTOR SPINELLO.

By a most distressing railroad accident in Berkeley on the morning of May 24, Marius Joseph Spinello, Instructor in Italian and French, sustained injuries which resulted shortly afterward in his death. The sad accident came as a profound shock to the college community, of which he had during his two short years of residence at the University become a highly-esteemed member. To his students a helpful instructor and ever-sympathetic friend, to his colleagues in the faculty a valued and well loved co-worker, to all who came in contact with him an inspiration and a source of happiness, the death of Marius Joseph Spinello has left a void which cannot soon be filled. A sketch of his life is printed elsewhere in the "Chronicle."

Exercises devoted to the memory of Mr. Spinello were held at the University on Monday, October 17. Addresses were made by President Wheeler, Professors Henry Morse Stephens, Chauncey W. Wells, Frank Soule, and Samuel A. Chambers, and by F. T. Blanchard, '04. At the meeting it was unanimously decided, and a committee was appointed, to raise funds for the purchase of the library of Mr. Spinello and its incorporation with the University library, as a permanent memorial to him.

THE DOE BEQUEST.

One hundred and eight thousand dollars has been received by the University as the first payment under the bequest of the late Charles Franklin Doe for the University

Library. The total amount is to be twenty-four per cent. of the Doe estate and, although it is not known how much this will reach, it will probably not be less than \$600,000. It is proposed to commence work on the new building early in the coming spring. The plans are now being drawn by Supervising Architect John Galen Howard. Like the Hearst Memorial Mining Building and the new California Hall, now in process of erection, the library will be constructed of Raymond granite. The interior is to be fitted in the most modern manner, and will represent the latest ideas in bibliographical science. The arrangement of the books will be made with a view both to research and to general convenience. A large number of seminar rooms will be an important part of the interior construction. It will be at least three years before the building is completed.

VALUABLE ADDITION TO THE LIBRARY.

Through the generosity of Mr. John D. Spreckels of San Francisco, the German Department of the University of California is soon to possess one of the finest and most complete private Germanistic libraries in existence, that of the late Professor Karl Weinhold of the University of Berlin. Dr. Weinhold was one of the most distinguished scholars of the last half-century and an authority of eminence in the mediaeval German dialects and Germanic archaeology and folk-lore. His library contains some 10,000 volumes and is valued at over \$7,000. Though naturally strongest in the line of his specialties, it covers effectually the entire range of Germanic studies; the modern classics, literary criticism, and the history of literature being likewise well represented. The large number of first editions and other rare books constitute an especially valuable feature.

MRS. HEARST'S GIFTS FOR ANTHROPOLOGY.

The Department of Anthropology, already so greatly indebted to Mrs. Hearst, will continue to receive large aid from her throughout the present year.

During the year 1904-05 Mrs. Hearst will give to the department a total of about \$20,00. This will include the salaries of Dr. Frederick W. Putnam, Professor of Anthropology, Dr. Alfred F. Kroeber and Dr. Pliny E. Goddard, Instructors in Anthropology, and Mr. E. M. Hussey, Museum Assistant. In addition to her gift of salaries, Mrs. Hearst will provide a variety of moneys for exploration in many fields, for the transportation of museum materials, for the printing of the results of anthropological research, and for the care of the rich collections which have already been assembled.

GIFT OF ANTHROPOLOGICAL COLLECTION.

The Department of Anthropology has received from Mr. Cornelius E. Rumsey, of Riverside, the gift, as a memorial to Suton Roman, once editor of the *Overland Monthly*, a large collection from Chiriqui, of the Republic of Colombia, in Central America. This collection, which consists of about 800 objects, includes a number of terra cotta vessels of various forms and of many styles of decorations, figures of animals, whistles in the form of birds, and other interesting specimens of ancient art. There are also two large carvings in the form of animals. This collection was made by the late Mr. J. A. McNeil, who for several years explored the ancient tombs of prehistoric Chiriqui, having been first employed by Professor Putnam over thirty years ago, and by him sent to Central America for the purpose. It has been placed in the departmental museum in the Western Building of the Affiliated Colleges.

THE SAN DIEGO MARINE BIOLOGICAL ASSOCIATION.

With a view to making the work that has been carried on in Southern California for a number of years past by the Department of Zoölogy a permanent department of the University's activities, a number of citizens have organized the Marine Biological Association of San Diego, have guaranteed \$4,500 a year for three years for the maintenance

of marine biological investigation in the vicinity of San Diego, and have asked that the University assume its direction. The association promises also to place at the disposal of the Department of Zoölogy a twenty-ton vessel fitted with the requisite engines and scientific gear, placed at the service of the association by Mr. E. W. Scripps, and ample quarters for laboratory equipment, furnished by the Coronado Beach Company. The association expressly disclaims any intention of calling upon the University for money; the only aid it asks, other than the ultimate control of the association, being that it shall provide for the publication of the scientific results of the researches carried on. A committee of the Board of Regents has been appointed to confer with the Directors of the San Diego Association in regard to the matter.

ASTRONOMICAL EXPEDITIONS IN 1905.

Mr. William H. Crocker, who has been so many times a benefactor of the University, has offered to defray the expense of sending expeditions from the Lick Observatory to Egypt, Labrador, and Spain to observe the total eclipse of the sun on August 30, 1905. The expense of these expeditions will be at least \$7,000. That the Lick Observatory will be able to observe the eclipse at three stations so far removed from each other both in distance and in time will mean a most unusual opportunity for the University, especially in investigating such problems as the existence of intramercurial planets and the nature of the corona.

PUBLICATION OF DIRECTOR KEELER'S INVESTIGATIONS.

Through the generosity of a number of friends of the Lick Observatory who have given a total of \$2,050, and by the aid of the State of California, the University has been able to enter upon the publication of a volume of Lick Observatory publications which is to embody the results of the study of nebulae and star clusters inaugurated by the late Director Keeler at the Lick Observatory. These inves-

tigations have been declared by Sir Robert Ball, one of the best known of modern astronomers, to represent "by far the most striking advance which has been made in modern astronomy so far as general knowledge of the contents of the heavens is concerned."

THE BRYCE HISTORICAL ESSAY COMPETITION.

Through the generosity of Regent Rudolph J. Taussig of San Francisco to the University, there is offered a prize of \$100 for the best essay on "The Making of the Treaty of Guadalupe Hidalgo of September 2, 1848." According to the conditions made by the donor of the prize, the competitors must be either Seniors or graduate students in their first year of graduate work in the University, be less than twenty-five years of age, and with at least two years of regular standing. Professors Bernard Moses and Morse Stephens, who together selected the subject, will be two of the judges of the competition, and Mr. James Bryce, in whose honor the contest is named, has been asked to be the third member of the committee. The judgment of the third member will be final in selecting the winner of the prize.

OTHER GIFTS TO THE UNIVERSITY.

Mrs. Eugenia Schenck has presented to the University the library of her late husband, a well-known civil and mining engineer. The collection consists of about two hundred volumes in the various branches of engineering and in chemistry, physics, botany, and other natural sciences.

The Bulgarian government, through the intercession of M. Bakhméteff, Russian Minister at Sofia, and of Mr. Jerome B. Landfield of the Department of History, has presented to the University a set of the valuable philological and folk-lore publications of the Ministry of Public Instruction.

A friend of the University who wishes his name withheld has defrayed the cost—\$97.50—of the colored plates of the last publication in the University series in Zoölogy,

entitled: "The Structure and Regeneration of Plethodon," by Mr. Calvin Esterly.

COMMENCEMENT.

Five hundred and six students received degrees from the University on last Commencement day, May 18th. Of this number 359 obtained bachelor degrees in the academic departments, and 121 in the various professional schools. Twenty-six received higher degrees. The commencement exercises were held in the Greek Theatre. They consisted of an address by President Wheeler and brief addresses by five members of the graduating class—Max Thelen of the College of Social Sciences, Herbert McLean Evans of the College of Natural Sciences, Miss Elizabeth Arneill of the College of Letters, Frederick Louis Dreher of the Hastings College of the Law, and George Asa Harker of the College of Medicine. Rev. Carroll Melvin Davis, '79, now Rector of Christ's Church Cathedral of St. Louis, acted as chaplain. The military commissions were presented by Governor George C. Pardee, '79. A most successful Alumni luncheon occurred in Hearst Hall after the Commencement exercises.

CALIFORNIANS AT CONGRESS OF ARTS AND SCIENCES.

Fifteen members of the faculty represented the University of California in the International Congress of Arts and Sciences, held in St. Louis during the week of September 19th to 26th. This number was exceeded by the representation from only three other universities—Harvard, Columbia, and Chicago. Four members of the California faculty contributed papers at departmental meetings. President Wheeler was one of the two speakers in the department of the History of Language, as were Professors Jacques Loeb in the department of Biology, Adolph Caspar Miller in the department of Economics, and George Holmes Howison in the department of Philosophy. Professor Howison's paper was read by Professor Charles Mills Gayley.

Sectional addresses were delivered by Professor Elmer E. Brown in the Educational Theory section of the department of Education; Professor William E. Ritter in the Comparative Anatomy section of the department of Biology; Professor Bernard Moses in the Colonial Administration section of the department of Politics; Professor Carl C. Plehn in the section on Commerce and Exchange of the department of Economics; and Professor Samuel B. Christy in the Mining Engineering section of the department of Technology. Professor Frederick W. Putnam presided at the session of the department of Anthropology, as did Professor Bernard Moses at that of the department of Politics, and Professor Charles Mills Gayley in the English section of the department of the History of Language. Briefer addresses were made by Professors Armin O. Leuschner, Mellen W. Haskell, William E. Ritter, and Astronomers Robert G. Aitken and C. D. Perrine.

IRRIGATION IN NORTHERN ITALY.

Professor Elwood Mead has just published the first part of an elaborate report on Irrigation in Northern Italy, in pursuance of the purpose of the Irrigation and Drainage Investigations of the Department of Agriculture to make report upon the use of irrigation waters "at home and abroad." Italy, according to Professor Mead, has been the school of irrigation for the rest of the world. France, Egypt, India, and Australia have sent their ablest engineers and economists to study the system which for many centuries has made Northern Italy so prominent an agricultural producer. Italy's practice has exercised the greatest influence upon other parts of the world. The standard works upon this subject, however, were mostly written before the rise of modern corporation methods. The elaborate studies which Professor Mead has carried on in Northern Italy therefore have the greater importance because he has been able to observe modern corporation methods and modern governmental systems in Italy as she

is today. Those features of Italian irrigation practice which are suggestive to American irrigators have furnished the chief field of Professor Mead's study. Two other parts of the report are to follow in the near future.

OTHER ACTIVITIES OF FACULTY MEMBERS.

A rare scientific opportunity has been given to Associate Professor Charles A. Kofoid of the Department of Zoölogy. Through the invitation of Professor Alexander Agassiz he has become a member of the expedition now exploring the South Pacific in the United States steamer Albatross. The party before returning to San Francisco will investigate marine life about the Galapagos Islands, Easter Island, and the Low Archipelago. Much of the area to be visited has never been scientifically explored, and thus affords a probability of many new discoveries. Professor Kofoid has charge of all the pelagic operations of the expedition, and will supervise the plankton collections.

Assistant Professor John C. Merriam spent the past summer in the study of palaeontological material in various European museums, making comparisons with the collections made by him during late years in California and Oregon, comparisons necessary for the completion of his results. While in Europe he represented the University at the Sixth International Zoölogical Congress.

During the months of March and April Professor William E. Ritter was engaged in investigations for the United States Bureau of Fisheries on the United States steamer Albatross. The vessel cruised about the southern coast of California, chiefly within a radius of twenty miles of San Diego. Several hundred species of fish and other marine animals, many of them hitherto undiscovered, were secured and are now being studied in the zoölogical laboratories of the University of California and Stanford University. These investigations form a part of the general plan of the Bureau of Fisheries of a detailed exploration of the waters of the Pacific.

Professor Samuel Fortier of the Department of Irrigation has been put in charge of the work of extending the Turlock canal in central California.

Mrs. May L. Cheney, Appointment Secretary of the University, went east in October to visit various universities, with a view to investigating the methods used by various institutions of learning in recommending their graduates for positions. While in the east Mrs. Cheney represented the Western branch of the Association of Collegiate Alumnae at the national convention of that organization.

ADDITIONS TO THE FACULTY.

Fourteen new instructors have assumed their duties in the University faculty with the present term. Professor Henry Rand Hatfield, formerly Assistant Professor of Political Economy and Dean of the College of Commerce and Administration in the University of Chicago, has come to the University of California as Associate Professor of Accounting on the Flood Foundation. Professor Hatfield will offer courses in the Principles of Accounting and the Investment Market, branches of Political Economy in which instruction has not heretofore been given at the University. Assistant Professor Frederick E. Farrington, formerly of Teachers College of Columbia University, has been added to the department of Education. Mr. Ruliff S. Holway, who for the past year has been Instructor in Education, has been made Assistant Professor of Physical Geography. Mr. Herman W. Reynolds, a graduate of the University of Pennsylvania, for one year Instructor in Mechanical Engineering at the University of Pennsylvania, and for three years Assistant Professor in the same subject at the Michigan Agricultural College, has been appointed Assistant Professor of Mechanical Engineering, to fill the vacancy caused by the resignation of Assistant Professor C. C. Thomas. M. Robert Dupouey, for the past year Bourzier of the French Ministry of Public Instruction at Harvard University, has come to the University as Instructor

in French. Mr. Charles von Neumayer, for several years instructor in the Los Angeles State Normal School, has become Instructor in Public Speaking, and will coöperate with Professor Gayley and Assistant Professor Flaherty of the department of English. Dr. Charles M. Haring, a graduate of the Veterinary school of Cornell University, has been added to the Agricultural Department as Instructor in Veterinary Science and Bacteriology. Dr. Thomas C. McKay of Harvard University and Dr. Louis A. Parsons of the University of Utah have been made Instructors in Physics. Mr. Harry O. Wood, for the past year a member of the department of Mineralogy at Harvard University, has become Instructor in Geology. Mr. John P. Williams, a graduate of and for two years an Instructor in Civil Engineering at the University of Pennsylvania, has been appointed Instructor in Civil Engineering. Captain John T. Nance, Ninth U. S. Cavalry, has been detailed by the War Department and appointed by the Board of Regents as Professor of Military Science and Tactics, to succeed Colonel Henry de H. Waite. Mr. Chaney Juday, recently in charge of the instruction in Zoölogy at the University of Colorado, has been appointed Instructor in Zoölogy to fill the temporary vacancy caused by the absence of Associate Professor Charles A. Kofoid on the Agassiz expedition to the South Pacific. Mr. Lester H. Jacobs has accepted an appointment in the department of Jurisprudence as Lecturer on the Law of Insurance.

Mr. T. M. Moe and Mr. Rocco Giorgio have been appointed Assistants in French and Italian respectively. Dr. Wolfgang Ostwald, a son of Professor Wilhelm Ostwald of the University of Leipzig, is serving as Assistant in Physiology. Mr. John F. Borden, a graduate of Cornell University, and Mr. Harold Ebright have been appointed Assistants in Mechanical Engineering and Civil Engineering respectively.

Professor William Albert Setchell of the department of Botany, Professor Thomas R. Bacon of the department

of History, Associate Professor Fletcher B. Dresslar of the department of Education, and Assistant Professor George H. Boke of the department of Jurisprudence, have returned to the University this year after leaves of absence.

NEW ALUMNI CLUBS FORMED.

Two new University of California Alumni Clubs have been formed recently, one of alumni living in the vicinity of New York City, and the other of those resident in South Africa. The New York Alumni Club holds monthly dinners and plans eventually to have a centrally located club-room, where the dinners will be held and where periodicals, newspapers, reports, and other literature of the University of California may be kept on file. A number of the members of the Faculty of the University have been entertained by the club while in New York. The officers of the club are A. W. Ransome, '96, President, and H. W. Corbett, '95, Secretary. Mr. Corbett's address is 31 Union Square, New York City. As secretary he is anxious to obtain information as to all alumni of the University living in or about New York.

The South African Alumni Association includes in its membership over forty alumni of the University who are engaged in mining or other interests in the Transvaal. It is the purpose of the Association to keep its members in close touch with their alma mater by gathering them together at a semi-annual meeting and banquet, and by obtaining for them the various University publications. A number of the members recently subscribed \$440 toward the Le Conte Memorial Lodge in the Yosemite Valley, and the Association as a whole proposes to give material aid in the near future toward the erection of the proposed Alumni Hall.

THE UNIVERSITY OF CALIFORNIA CLUB.

A new organization of University of California alumni which promises to do much for its alma mater is the Uni-

versity of California Club, which was organized early in 1904. It had its origin in the monthly luncheons of alumni who are engaged in business in San Francisco. The club has rooms at the southeast corner of Geary and Powell streets, San Francisco. All alumni, or other men who have been at any time for two years or more students of the University, and all past or present officers of administration and instruction are eligible for membership. Its membership is now something over three hundred and sixty.

LECTURES AND UNIVERSITY MEETINGS.

Dr. Alonzo Englebert Taylor, Professor of Pathology, delivered a series of eight Herzstein Lectures on "Ferments and Fermentations," during the three weeks from October 4th to October 27th. The lectures were given both in Berkeley and in San Francisco. This series was made possible by the generosity of Dr. M. Herzstein of San Francisco, who has more than once been a generous benefactor of the University.

Professor Attilio Brunialti, member of the Council of State and member of the Italian Parliament, lectured October 3d on "Social Conditions in Italy."

During the months of February, March, and April a number of astronomical lectures were delivered in the Students' Observatory by members of the Lick Observatory staff, including Director W. W. Campbell and Astronomers R. H. Tucker and W. J. Hussey, and Dr. Sidney Dean Townley, of the International Latitude Observatory of Ukiah.

The annual address to the Philosophical Union was delivered this year on the evening of August 26th, by Dr. James Ward, Fellow of Trinity College and Professor of Mental Philosophy at Cambridge, and Lecturer in Psychology in the Summer Session of the University of California. "Philosophical Orientation and Scientific Standards" was his theme.

Hon. Leslie M. Shaw, Secretary of the Treasury of the United States, addressed the students September 6th, on "The Principles of Success."

On April 1st Homer Davenport, the cartoonist, lectured to the students of the University under the auspices and for the benefit of the English Club.

Alden Sampson, M.A., and advocate of the establishment of game refuges, lectured in Hearst Hall on September 19th, on "Game Preservation in Western Forests."

Fourteen seniors delivered two-minute addresses at the closing University meeting of last year on April 22d, the general theme being "What Can I Do for the University?" Those who spoke were Max Thelen, Miss Martha Rice, Philip M. Carey, Arthur Montague Cooley, Samuel Stow, Miss Tallulah LeConte, Hart Greensfelder, Arthur W. Foster, Carleton H. Parker, Sterling Bunnell, Miss Elizabeth Arneill, James Edwin Roadhouse, Scott Hendricks, and William H. Dehm.

The opening University meeting of the current term, held to welcome the members of the incoming Freshman class, occurred on August 22d, President Wheeler being the speaker.

The second University meeting was held September 2d, the speakers being Professor William A. Setchell, who took for his topic "Student life in this and other lands," and Rev. William H. Hopkins, who has recently become pastor of the Berkeley First Congregational Church.

At the third meeting, on September 16th, the speakers were Mr. William Kent, well known as an advocate of political reform in the city of Chicago, and Professor Thomas R. Bacon.

On October 14th the meeting was addressed by Hon. William W. Morrow, of the United States Circuit Court, and President David Starr Jordan, of Stanford University.

At the fifth meeting of the term, on October 28th, the speakers were Rev. Bradford Leavitt, pastor of the First

Unitarian Church of San Francisco, and Mr. William Greer Harrison, President of the Olympic Club of San Francisco.

INCREASE IN NUMBER OF STUDENTS.

Statistics recently compiled in the Recorder's Office show that in five years the number of students at the University has increased nearly one-fourth. Twenty-four hundred and fifty-five students have registered at Berkeley up to November 1 of this year, as against 2,002 at a similar date in 1900. At the corresponding date of last year the number was 2392. Further registration between now and the end of the year will undoubtedly amount to at least 300, which will make a total for 1904-05 of 2,755. Of the students who have registered thus far this year, 846 are new-comers at the University.

THE RHODES' SCHOLAR FOR 1904.

William Clark Crittenden, a Junior in the College of Social Sciences, has been selected as the First Rhodes' Scholar from California. Of the eight students of the University of California who took the Rhodes Scholarship examination, seven passed. Of the American states, five had no candidates for the Rhodes' Scholarship, and twelve had only one. Out of the total number of two hundred and forty-three who took the examination throughout the United States, only one hundred and twenty passed. It is most creditable to California that so large a proportion of those taking the examination were successful.

KNIGHTS-TEMPLAR CONCERT.

A number of visiting Knights-Templar were the guests of the University on Thursday afternoon, September 8th, at a concert given in the Greek Theatre in their honor. The program was rendered chiefly by the student musical organizations. Over two thousand Knights-Templar and their friends attended the concert.

"HAMLET" IN THE GREEK THEATRE.

Shakespeare's "Hamlet," rendered in the Elizabethan manner, was given in the Greek Theatre on October 1st, by Ben Greet and his company of players. The presentation occupied both morning and afternoon. Some forty students assisted the company.

To show his appreciation of the interest taken by the University public and especially by the students in his presentation, Mr. Greet has offered a prize of the Temple Shakespeare, complete in forty volumes, to the student who shall write the best essay on "Hamlet."

The "Star of Bethlehem," a play adapted from the old English miracle plays by Professor Charles Mills Gayley, was given in the Harmon Gymnasium by Mr. Greet's players on November 16th.

THE "AJAX."

For the second time since its completion, the Greek Theatre has been the scene of the presentation of Greek drama. On Saturday, October 15th, the "Ajax" of Sophocles was presented by the students of the University, under the auspices of the department of Greek.

SOUSA BAND CONCERT.

A fourth entertainment given in the Greek Theatre under the auspices of the Musical and Dramatic Committee, was a concert by the Sousa Band on the afternoon of October 21st.

HALF-HOURS OF MUSIC.

The "half-hours of music" which were so successful last term, are being continued this year. At four every Sunday afternoon, in the Greek Theatre, one or another of the student musical organizations renders a brief program. The public is welcome. As many as five thousand people have been present at some of these concerts.

SHORT COURSES IN AGRICULTURE.

The Short Courses in Agriculture, which during the past few years have grown to be an important branch of the University's curriculum, began on October 25th and will continue until the 9th of December. They comprise this year several lines of instruction not heretofore offered during the short course period. These subjects are: Animal Industry, seven courses in which are being given by Assistant Professors Major and Ward and Mr. H. M. Hall; Nutrition, four courses in which are being given by Assistant Professor Jaffa; and Viticulture, in charge of Assistant Professor Twight. In addition to these new departments instruction is being given in the several branches of General Agriculture, Horticulture, Entomology, and Dairying.

A FARMERS' INSTITUTE IN BERKELEY.

With a view to bringing agriculturists in California into closer touch with the workings of the Agricultural Department and a clearer understanding of its purposes and methods, the Department held in Berkeley, October 26th to 27th, a State Farmers' Institute. Practically all the farming sections of the state were represented upon the list of speakers, the list being made up about equally from members of the Agricultural Department faculty and from prominent agriculturalists and business men not connected with the University. The attendance was large and enthusiastic. At the close the agriculturists present adopted resolutions asking the Legislature to take immediate action to make a thorough course of elementary training in agriculture a part of the curriculum of all the State Normal Schools; to make an appropriation of \$500,000 for a University of California farm and for a building for the purposes of the Department of Agriculture; to increase the annual appropriation for Farmers' Institutes from \$6,000 to \$10,000; and to give state assistance to the experiment stations of the United States Department of Agriculture situated in California; and also asking the University

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authorities to arrange for the publication and distribution of 15,000 copies of a report of such of the proceedings of annual institutes as in their judgment is worthy of preservation in permanent form, as soon as funds are available for this purpose.

OTHER AGRICULTURAL COLLEGE ACTIVITIES.

Professor Ralph E. Smith, Plant Pathologist, after a year's investigation of the asparagus rust, which so seriously threatened the asparagus industry in California, has arrived at what he believes a satisfactory remedy for the disease. The month of September he spent in investigating the rust in eastern regions for comparison with the results of his work in California. The investigation of the asparagus rust was made possible by a donation of \$2500, given by twenty-three asparagus growers in different parts of the state.

In order to become thoroughly familiar with the habits of the mosquito, Professor C. W. Woodworth and members of his class have made weekly visits during the term to certain breeding places of the insect near Burlingame. A preliminary study of the mosquito's migrations and habits is being made with a view to conducting a campaign for effective resistance to the pest during the coming spring.

Citrus orchards in the vicinity of Riverside have been loaned to the University for investigation of the problem of the fertilization of citrus fruits.

Through the efforts of the members of the Department of Entomology, chief among which were those of Associate Professor Woodworth and Mr. J. S. Hunter, the grasshopper evil about the vicinity of Turlock has been completely eradicated. The methods employed differed in different sections. Where it was possible whole fields were burned over and the larvae of the insect thus destroyed. In orchards and cultivated fields a different plan was necessary, and various poisons were used. The activities of the

department have saved the farmers of this section at least \$300,000.

Professor Frederick T. Bioletti, who has left an agricultural position in South Africa to rejoin the faculty of the University of California in January as Assistant Professor of Viticulture, is at present making a tour of the wine-producing countries of southern Europe, investigating the methods of production and conferring with wine chemists in an endeavor to gain ideas which may be of value to viticultural interests of California. Before his return to Berkeley he will visit Algeria.

UNIVERSITY REPRESENTATION.

Professors William A. Merrill and Arthur S. Eakle were the delegates of the University at the inauguration of Professor Charles Howe as President of the Case School of Applied Sciences in Cleveland, Ohio, on May 11th. On the same occasion the Lick Observatory was represented by Mr. Ambrose Swasey, senior member of the firm of Warner & Swasey, of Cleveland, who constructed the Lick telescope.

Professor Charles Montague Bakewell represented the University at the Centennial of the University of Vermont, at Burlington, Vermont, July 3d to 7th. President Wheeler delivered one of the addresses of the Semi-centennial Jubilee of the University of Wisconsin on June 8th. On September 22d he delivered an address at the Seventy-fifth Anniversary of the founding of Illinois College, in Jacksonville, Illinois. On both of these occasions he received the degree of LL.D.

At the Modesto-Turlock jubilee held in Modesto on September 23d, in celebration of the completion of the Modesto-Turlock irrigation canal, the University was represented by Professors Elwood Mead, Samuel Fortier and Frank Soulé. On October 18th President Wheeler and Professors Mead, Fortier, Soulé, and Wickson represented the University at the State Irrigation Convention held in Modesto.

SCHOOL EXAMINERS FOR 1905.

As is customary, the University will next term send members of its faculty to examine the various high schools of the State which wish their pupils to be admitted without examination. Four of the examining board, Professor C. W. Wells of the Department of English, Professor H. W. Prescott of Latin, Dr. E. I. McCormac of History, and Dr. E. E. Hall of Physics, will be away from the University during the entire semester. Other members of the faculty, who will carry on the work of examining simultaneously with their instruction at the University, are Professors W. Scott Thomas, H. K. Schilling, E. B. Clapp, and H. B. Torrey.

THE 1904 SUMMER SESSION.

LEON J. RICHARDSON.

The Summer Session of the University of California for 1904 was held from June 27 to August 6: Twenty-five different subjects were represented in the courses of instruction, which were given partly by members of the regular Faculty of the University and partly by a number of well-known scholars from Eastern universities and from Europe. Among them were: Svante August Arrhenius, Ph.D., Professor of Physics, University of Stockholm, Reginald Aldworthy Daly, Ph.D., Geologist to Canada for the International Boundary Commission, Fonger De Haan, Ph.D., Professor of Spanish, Bryn Mawr College, Charles Hall Grandgent, A.B., Professor of Romance Languages, Harvard University, Francis Barton Gummere, Ph.D., Professor of English, Haverford College, Hammond Lamont, A.B., Managing Editor of the *New York Evening Post*, and formerly Professor of Rhetoric, Brown University, Frank Morton McMurray, Ph.D., Professor of the Theory and Practice of Teaching in Teachers College, Columbia University, Morris Hicky Morgan, Ph.D., L.H.D., Professor of Classical Philology, Harvard University, Albert Augustus Stanley, M.A., Professor of Music, University of Michigan, Frederick Jackson Turner, Ph.D., Director of the School of History and Professor of American History, University of Wisconsin, James Ward, M.A., Sc.D., LL.D.,

fellow of Trinity College and Professor of Mental Philosophy, University of Cambridge, Hugo de Vries, Ph.D., Professor of Botany, University of Amsterdam, Edward Cooke Armstrong, Ph.D., Associate Professor of French, Johns Hopkins University, Archibald Cary Coolidge, Ph.D., Assistant Professor of History, Harvard University.

With the growth of the Summer Session during recent years, there has come a need for a new form of organization, one that should more definitely meet the very diverse demands laid upon the University in that portion of the academic year. Accordingly persons in attendance this summer were enrolled in the following general classes: I. Teachers. II. (a) Undergraduates. (b) Graduates. This class included all that were at the time working for a degree. III. Auditors. The courses offered—and herein is the essential point of the new organization—were in a large number of cases planned with special reference to some one of these classes. The results proved so encouraging that the plan will probably be carried out in further detail next year. In a general way two sorts of courses seem to be in demand during the summer term: (1) those of an elementary character, such as the introduction to a subject, especially to a language; and (2) those of a distinctly advanced grade, accommodated to the needs of specialists and professional people.

Among those who frequent the University during the summer, teachers form a large and important class, especially those engaged in secondary school work. They come, some for refreshment and inspiration, some for regular instruction. Not a few of them are led to extend their residence at Berkeley and to pursue work throughout an entire academic year. So close and vital to the University is this general class that from its ranks a certain number of lecturers or lecturers' assistants are annually invited to take places on the Summer Session Faculty. This policy is bringing mutual benefit to the University and the vocation of secondary teaching through the Pacific States.

Advanced students and specialists attend the Summer Session in ever increasing numbers. With the needs of this class in view, regular graduate courses were offered this year by Professor Arrhenius, Professor Loeb, Professor Turner, and Professor de Vries. It was once doubted whether such work were feasible within the brief period of a summer term. Experience, however, has established that students may successfully carry on courses of this character, provided, as a rule, they devote themselves to a single subject. It may be said, furthermore, in this connection, that certain advanced undergraduate courses formerly judged too heavy or too extensive in range for Summer Session purposes, are now being successfully given, with a similar limitation of the number of courses that the student is permitted to take. Work of this kind was conducted in philosophy by Professor Ward, in mathematics by Professor Haskell, and in astronomy by Professor Leuschner.

The instruction of regular undergraduate students, whether from our own University or from Stanford University, is now on a satisfactory basis: less satisfactory is the problem of dealing with students who come solely for the purpose of removing conditions—a class of persons that is, happily, diminishing in numbers. It may soon be advisable to exclude them altogether.

It is interesting to note that the Summer Session brings about on American soil certain advantages which are gained in Europe through the so-called system of student migration. As is well known, it is not easy for the student to transfer his work from one American university to another; and, even if it were, the remoteness of one institution from another would often militate against such a practice. By bringing annually a new group of scholars to Berkeley the University is offering richer opportunities than could presumably be gained from any one faculty. Thus not only new authorities on old subjects are heard, but new subjects, or at least new branches of old subjects,

are introduced. Music, for example, which the Regents have not yet been able to put on a permanent footing in our University, was a prominent feature of the summer's work, and the large number of people who availed themselves of Professor Stanley's instruction is a sign that needs no comment.

The work of the University was not limited during the summer to the class-room. A number of public lectures were delivered in Berkeley, San Francisco, Marysville and San José. The summer term, too, is establishing better and closer relations between California and other institutions of learning, mainly through the fact that it enables many scholars and men of letters to visit Berkeley who would not otherwise know the University in its home.

Finally, the Summer Session is a self-supporting branch of the University activities. And this means more than is perhaps at first apparent. In a community where education is offered free, some are likely to be found who fail to appreciate the State's effort in their behalf and what the nature of their obligation is. They become possessed of the idea that education is by nature a cheap thing; they fall into the habit of thinking that they can get something for nothing, or even that the world owes them a living. It exerts a good corrective influence on such persons to have one term in the academic year when the student pays for what he gets.

Certain other features of the Summer Session will appear in the following statistics, which have been supplied by the Recorder of the University.

STATISTICS OF SUMMER SESSION, 1904.

Students of California by Counties.

Alameda	338	Sacramento.....	8
Amador	1	San Diego	13
Butte	8	San Francisco	135
Calaveras.....	3	San Joaquin	6
Colusa	1	San Luis Obispo	10
Contra Costa.....	6	San Mateo.....	4
Eldorado	1	Santa Barbara	13
Fresno	12	Santa Clara.....	53
Humboldt	8	Santa Cruz	6
Kern	1	Shasta	3
Kings	1	Siskiyou	2
Lassen	1	Solano	10
Los Angeles	62	Sonoma	6
Marin	8	Stanislaus	1
Mendocino.....	4	Sutter	2
Merced	5	Tehama	1
Modoc	1	Tulare	6
Monterey	10	Tuolumne	3
Napa	4	Ventura	5
Nevada	3	Yolo	6
Orange	6	Yuba	10
Placer	6		
Riverside	4	Total	801
San Bernardino	4		

Residents of Other States.

Arizona	5
Colorado	1
Hawaii	1
Idaho	5
Illinois	2
Indiana	1
Kentucky	1
Massachusetts	3
Michigan	2
Mississippi	1
Missouri	1
Montana	1
Nebraska	4
Nevada	6
New Mexico	1
New York	3
Oregon	9
Texas	1
Utah	7
Washington	14
Wisconsin	2
Total	71

Residents of Foreign Countries.

Japan	2
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Recapitulation.

California	801
Other States	71
Foreign Countries	2
Total	874

Students Who Returned the Following Year or Thereafter.

1902-03-04.....	42	Graduates of Univ. of Cal...	114
1902-03.....	87	" Stanford.....	44
1902 and '04.....	55	" other colleges	110
1903 and '04.....	80	" normalschools	69
		" of academies..	45
		" high schools....	360
Men.....	416	Total.....	913
Women	497	Unqualified.....	61
Total.....	913	Applicants.....	874

Counties represented in 1903 and not in 1904.

Alpine	Lake	Plumas
Del Norte	Madera	San Benito
Glenn	Mariposa	Sierra
Inyo	Mono	Trinity

No counties not represented in 1903 were represented in 1904.

Occupations.

Students:		Contractor.....	1
University of California....	225	Journalists	3
Stanford	39	Mechanics.....	2
Other colleges	9	Chemists.....	1
High schools.....	26	Assayers	3
Elsewhere	23	Metaphysician	1
	322	Train dispatcher	1
Teachers: Graduates of		Real estate agents	2
University of California....	81	Electrician	1
Stanford	42	Draughtsman	1
Other colleges	65	Shipping clerk	1
State Normals	67	Insurance agents.....	2
High schools....	43	Carman in mine	1
Elsewhere	53	Readers	2
	351	Attorney-at-Law.....	1
Stenographers	1	Commissioner.....	1
Clerk.....	1	Salesman.....	1
Housekeepers.....	2	Surveyors	2
Foreman general contracting	1	Nurse	1
Bookkeepers	4	Farmer	1
Library assistant.....	1	Foreign correspondent.....	1
Students of music.....	2	Physicians.....	4
Superintendents of schools..	4	Fire insurance broker	1
Ministers.....	8	Book dealer	1
Machinists.....	2	Street car conductor	1
Merchants	3	None given	161
		Total.....	900

